Note_The red line indicates the limit, north of which the successful cultivation of the cerealia or bread producing grains, ceases; it is also the boundary, north of which dense population cannot exist.
The same line shews the general boundary between the horse and rein deer.
POLAR SEA
N. Georgian I.
BAFFINS BAY
GREENLAND
ARCTIC OCEAN
Spitsbergen
Novaya Zemlia
Arctic Circle
Iceland
Behring's Str.
NORTH AMERICA
Hudson's Bay
Quebec
Washington
Mexico
Tropic of Cancer
Cuba
Hayti
Guatemala
Stockholm
Baltic S.
St. Petersburg
British Is.
Copenhagen
Berlin
London
Paris
Vienna
Rome
Madrid
Lisbon
EUROPE
Constantinople
Mediterranean
Tunis
Tripoli
Cairo
Morocco
Newfoundland
ATLANTIC OCEAN
ASIA
Samarcand
Ispahan
Pekin
Jedo
Kamtschatka
Calcutta
Ava
Ceylon
PACIFIC OCEAN
Borneo
Sumatra
Java
N. Guinea
OCEANA
PACIFIC OCEAN
Bogota
Lima
La Paz
SOUTH AMERICA
Rio Janeiro
Santiago
B. Ayres
Tropic of Capricorn
Terra del Fuego
Cape Horn
AFRICA
Kouka
Equator
Madagascar
INDIAN OCEAN
Capricorn
NEW HOLLAND
Sidney
New Zealand
C. Good Hope
Course of the current
SOUTHERN OCEAN
Antarctic Circle
WORLD.
West of Washington
East of Washington
East
West

VIEW

OF THE

UNITED STATES.

VIEW

OF THE

UNITED STATES,

HISTORICAL, GEOGRAPHICAL, AND STATISTICAL;

EXHIBITING, IN A CONVENIENT FORM,

THE NATURAL AND ARTIFICIAL FEATURES

OF THE

SEVERAL STATES,

AND EMBRACING THOSE LEADING BRANCHES OF HISTORY AND STATISTICS BEST ADAPTED TO DEVELOP THE PRESENT CONDITION OF THE

NORTH AMERICAN UNION.

ILLUSTRATED WITH MAPS, &c.

BY WILLIAM DARBY.

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PREFACE.

In the execution of the volume I now place before the public, the natural method was chosen in preference to the usual more regular course of geographical description. In the physical part the names of artificial subdivisions have been introduced only where indispensable; and the names of a few cities used as mere land-marks. The rivers are traced in a connected series as far as possible, and the continuity of the mountain systems traced as far as accurate data have been collected.

With such previous survey of the mountain and river systems, and with their relative extent given, the artificial subdivisions can be referred clearly to their respective natural section. In a view, necessarily brief, only outlines could be given, and the principal benefit of such a view would have been lost by crowding the description with too much detail. The work is intended for practical use, therefore technical terms were excluded with scrupulous care.

Geology, as it stands in our books, being a science (if it deserves the name of a science) of conjecture, I have rejected, as far as practicable, terms that teach nothing definite. How far I have suc-

ceeded the reader will decide; but my sedulous endeavours have been to render my little production a safe manual in regard to all the dependance that agriculture, commerce, and canal and road improvement may have upon correct geographical description.

In general but little of hypothesis has been hazarded, and this rule, in every case so necessary, has been observed respecting the climate. Long previous to writing for publication, on that or any other subject, I had been led, by lessons drawn from nature, to reject much that Volney and others had given as theory. With ample means placed at my disposal, I have collected and embodied data on the meteorology of the United States, as connected with that of the whole earth. In regard to personal means of observation, though my range was extensive, there is one, at least, to whom I must yield. That man's name is placed to the subjoined testimonial, which I gratefully make a part of this preface.

"Dear Sir: I have perused with great satisfaction your highly instructive Treatise on the subject of Climate generally, and that of the United States in particular; and it gives me pleasure to add my public testimony in favour of the correctness of your views and deductions. In regard to your conclusions respecting the temperature of the climate of the Great Valley or basin of the Mississippi, compared with that of the country bordering upon the Atlantic ocean, they are, to the best of my knowledge,

correct, and accordant with my own observations and experience in relation to this subject.

I remain, dear sir, very respectfully,

Your obedient servant,

S. H. LONG, *Topl. Engineer.*"

The substance of the meteorological observations referred to in Col. Long's Expeditions, and also the observations of Mr. Haines, are embodied in Chapter X. I always regard with peculiar respect the evidence of an actual observer, experienced on the subject which his testimony is requisite to support; and, therefore, consider the evidence of Col. Long, in the case of the climate of the United States, as going far towards a decision of the controversy.

On more than one occasion, I have stated that, on the principles of hydrostatics, the surface of the Gulf of Mexico must be very considerably elevated above that of the Atlantic ocean opposite the Chesapeake and Delaware bays. This theory is reiterated in the View of the United States, and I think stands on a secure basis, unless some other cause than gravitation can be given to account for a stream flowing upwards of one thousand miles, and towards its fountain, with steady and so great rapidity, as from three to five miles hourly.

The political divisions have been placed in alphabetical order, giving a facility of reference which would not have been compensated by any geographical engrouping. There cannot easily be made any division of the states and territories, in regard

to their relative position, against which very valid objections may not be urged.

In one respect the View has a manifest advantage. It not only gives from the best authority, that of the General Post Office, every county in the United States, at the beginning of the current year; but also embraces much of the original information collected by Mr. H. S. Tanner for his valuable Map of the United States. The counties are alphabetically arranged under their respective states, and with their relative position indicated.

With a candid reader it may not be necessary to state, that in a survey so widely extended errors must be expected. None will be found that my utmost care could prevent; but unaided as I have always been, in the collection of geographical material, the surprise to myself is that there are not more serious omissions at least.

In the boundaries and areas of the states and territories I have used round numbers, unless where my data demanded or authorised more precision.

Before closing this preface, I take the opportunity to tender my acknowledgments to Mr. M'Lean, Post-Master General; Mr. John Vaughan, Secretary to the American Philosophical Society; to Mr. Reuben Haines, of Germantown; and to Col. S. H. Long, of the Department of Topographical Engineers.

WILLIAM DARBY.

Baltimore, Oct. 18, 1828.

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CHAPTER I.

HISTORICAL INTRODUCTION.

In every occasion where I have been called upon to make the estimate, I have considered geography as a moral science. The interest we feel in tracing the features, developing the resources, and recording the improvements of any given portion of the earth, must arise from the character of the people who inhabit its surface. In this respect, not alone the territory of the United States, but all America, is acquiring daily more interest to arrest the attention of the statesman and philosopher.

The geography of the United States is a vast outline, tolerably traced, but the shades of colouring remain a void, except in a few instances. The intrinsic value of statistical knowledge can only be known from its application in augmenting the sum of general prosperity, by pointing out the springs of general resource. This invaluable pursuit has only recently assumed the character of a science, and, as such, is yet confined to a few countries, and is every where imperfect. Consequently, important as it may be as a moral and physical science, geography derives its highest value as an aid to human history. In this respect our views of nations are clear and decisive in proportion as we possess a comprehensive knowledge of their locality.

The accumulation of material for both history and geography, has been in America, during the last half century, too rapid and massive to admit adequate arrangement and record. Cities, towns, states,

and even empires, are presenting themselves, with a rapidity which outstrips the utmost effort of the pen or pencil. In the present instance, all that the author dared to undertake, was a general sketch of either the history or geography of his country; and in particular, a mere outline of the former, is all that the necessary brevity of "The View" would permit.

"Courage, wisdom, integrity, and honour, are not to be measured by the sphere assigned them to act in, but by the trials they undergo, and the vouchers they furnish: and if so manifested, need neither robes nor titles to set them off."*

The United States as a nation "*knows no fabulous age*;" in scanning its history, every point of outset is fixed and certain. The original colonies were, in most instances, established under the direct emigration of men, influenced by motives to action far above the ordinary moral incentives to human conduct.

From the subsequent consequences of such principles, no department of civil history demands from mankind such profound attention as the Anglo-American colonial. In these early establishments, the ancient Saxon free institutions were implanted, guarded, and flourished, whilst fading or expiring in Europe. It affords, to a well-regulated mind, a cheerful retrospect, the progress of new-formed societies, amongst the members of whom the most exalted principles of ethics, jurisprudence, and legislation, were not alone preserved, but received a more solid sanction in the hearts of men, from contrast with their retrogradation in their pristine seats.

When America was first discovered, the people of Europe and their rulers seem to have, with one accord, considered the newly-found regions the property of the first who could disembark on its shores.

* Benjamin Franklin's Historical Review of the Constitution and Government of Pennsylvania, p. 5.

In a struggle for division of so rich a prize, Spain, Portugal, England, and France, were the most conspicuous competitors Expeditions were sent out under the authority of each of these governments. Henry VII., then king of England, sent to America, in May 1497, John Cabot, who, with his son Sebastian, discovered and coasted North America, from Newfoundland to the point of Florida. The Cabots were the first individuals recorded in history, who, under the authority of any European government, visited the south-east coasts of North America. There still, however, exists strong evidence, that, as simple fishermen, the Basques, or Bretons, from the north-west part of France, had visited the coasts of Greenland and adjacent parts, before any discoveries were made of the same places by national authority. During the long period which intervened, from the voyages of the Cabots to the actual colonization by both, the English and French nations seem to have preserved a nearly equal pace in the career of discovery.

An examination of the intervening history of England will afford solid reasons why the government and people of that kingdom did not sooner avail themselves of their claims in North America. Under the Tudors, neither the population nor resources of England were adequate to distant colonization, or even commercial exertion; and to physical weakness were superadded political and religious contention.

The immense treasures in gold and silver procured from America, by the Spaniards, also tended to retard the northern nations of Europe from forming establishments on the opposing part of the newly discovered continent. Every nation considered America as a seat of mines, and when unable to procure the precious metals, disregarded every other advantage. Although, however, slighted nationally, North America attracted the individual attention of many

Englishmen, in the early part of the sixteenth century. In 1502, Hugh Elliot and Thomas Ashurst, merchants of Bristol, with some other associates, obtained letters patent from Henry VII., with the avowed intention of colonizing the newly discovered regions. The original of this patent in Latin, is preserved in Hazard's collections. It was the first English governmental grant respecting any part of America; but fell useless, no steps having been ever taken to carry its provisions into effect. The actual want of population at that time, in all Europe, but more particularly in the northern parts, opposed an insuperable barrier to colonization. In 1500, it is rendered probable, from concurrent circumstances, that the English crown did not include, under its subjection, three millions of people. Nautical skill and commercial enterprise were also still more contracted than were the number of inhabitants. The discoverers of North America, under English authority, were Italians; no English seaman of that age appears to have been competent to the execution of such an enterprise. A similar remark may be extended to Spain; as nearly all the discoverers under that crown were Italians. Hungry and cruel Spanish grandees, of the lowest class of their order, seized the fruits; but it was the scientific men of Italy, who cleared the path to the new garden of Hesperides.

The French were more attentive to North America, than were the English at this early period; and the former, much sooner than the latter, perceived the true source of wealth, offered by the then very imperfectly known wilds of the recently discovered continent. In 1504, the Breton and Norman fishermen had a regular trade and establishments on Newfoundland, which at that time included the whole coast from Labrador to Florida.* The Bretons and

* When the Cabots discovered North America, they gave to the

Normans, however, only visited the north-east parts, along the coast of the island of Newfoundland and vicinity.

John Denys, a native of Rouen, sailed, in 1506, from Honfleur to the gulf of Newfoundland, and on his return to France, drew a map of that inland sea, its islands, and adjacent shores.

Denys was followed, in 1508, by Thomas Aubert, from Dieppe. The latter was the discoverer of the St. Lawrence river, and the country now called Lower Canada. On his return to Europe, Aubert carried with him some of the native savages.

The Baron of St. Lery, in 1524, made some abortive attempts at colonization in North America. The failure of St. Lery's design, and many other adverse causes, gave a check to French enterprise, and prevented actual colonization on the part of that nation in New France, for upwards of eighty years afterwards. Though without settlements by land, nevertheless the French fisheries flourished, and the knowledge of the country by that people became annually more accurate.

The events of a voyage made by a Florentine,

parts they visited the name of Newfoundland, which it retained until superseded by that of Virginia, imposed by Queen Elizabeth, in 1584. At a subsequent period to the discoveries of the Cabots, the Spaniards discovered the south-west sections of the same coast, and named it Florida. Newfoundland and Florida, therefore, included all the coast of North America between the Cuba channel and St. Lawrence. The extremes on the Atlantic ocean, still retain their original appellations, whilst the intermediate space has been parcelled, and variously designated. See pages 28, 29.

It is a real subject of regret, that either Virginia or Florida had not prevailed, and been preserved over the whole Atlantic coast now in the United States. They are both fine sonorous names, and certainly preferable, as general terms, to the awkward expression United States. Either of the former would have been distinctive; the latter applies vaguely, to any combination of states into one general confederacy, and always demands circumlocution, to render its particular application definite.

John Verrezzana, in the service of Francis I., king of France, are very imperfectly known. From the scanty records on the subject, it appears that, in 1524, Verrezzana reached the south-east coast of North America, and visited its shores from Florida to Nova Scotia. This discoverer was lost, and with him, in great part, the notes of his operations.

Though suspended in their efforts to either colonize or pursue their researches in America, the views of the French were constantly directed towards this continent. In 1534, Philip Chabot, admiral of France, represented so strongly to the king the multiplied advantages which Spain was then deriving from her colonies, that James Cartier, of St. Maloes, by royal commission, sailed from that port, April 20th, on a voyage of discovery, with two small ships and one hundred and twenty men. In his first voyage, Cartier sailed round the island of Newfoundland, discovered and named the Bay des Chaleurs, on the continent, and having afterwards reached N. Lat. 51°, on the Labrador coast, returned to Europe.

In his second voyage, 1535, Cartier penetrated the St. Lawrence as high as the island of Hochelaga, now Montreal, and having treacherously seized some of the natives, returned with them to France. Though disgraced by his conduct towards the savages of America, Cartier appears to have been the first individual from the north-west of Europe, who conceived an idea of the true wealth to be derived from the regions he had explored. He represented, in his report to the king, the great advantages which were offered by the fur trade alone ; however, not having gold and silver mines in his list, no notice was taken of his representations.

Nearly forty years had elapsed from the discoveries of the Cabots, before any serious attempt was made by the English nation to avail itself of the claim. In 1536, a gentleman of London, at his own risk, though countenanced by the king, Henry VIII.,

undertook a voyage to America. This adventurer, by the name of Hore, was accompanied by one hundred and twenty persons, of whom twenty-five or thirty were men of education and character. Hore's expedition was, in a peculiar manner, unfortunate. After having visited Cape Breton and some other places in the gulf of St. Lawrence, the party were reduced to the utmost extremity of want and wretchedness; many were literally starved. Falling in with a French fishing vessel, they seized her, and took from her as much provision as enabled the survivors to return to Europe. The facts attending this voyage, it has been observed, prove, that the English were then utterly ignorant of the inexhaustible stores of fish to be found in those seas; and that upwards of thirty years after a regular fishery had been established by the French, the English had not attempted a participation in that rich source of wealth and subsistence. From the sequel it will be seen, that strong reasons concur to support the conclusion, that the voyage of Hore contributed to turn the immediate attention of the English nation to the American seas. In 1548, the English fisheries had become an object of national legislation. In that year an act of parliament was passed, to prohibit the exaction, from English fishermen and mariners going in the service of the fishery at Newfoundland, of money, fish, or other reward, by any officer of the admiralty, under any pretext whatever. This was the first act of the English parliament relative to America.*

Cartier made his third voyage in 1541. Similar to that of England, the French government were inattentive to the value of the recently discovered territories in America; but many respectable individuals of both nations renewed, from time to time,

* Hackluyt, vol. i. p. 531—iii. p. 131, 132. Chalmers, vol. i. p. 9. Holmes' Annals, vol. i. p. 94.

projects of permanent colonization. The third voyage of Cartier was undertaken at the expense of Francis de la Roque, lord of Roberval, a gentleman of Picardy. Roberval was appointed by the king of France captain-general and viceroy of Canada and its dependencies, with full powers. Cartier, as deputy captain-general, was sent out by Roberval. The former, on August 23d, 1541, landed on Newfoundland, where he was, by appointment, to meet his principal. Roberval not arriving immediately, Cartier sailed alone to Canada, where he remained near two years, and built a temporary fort, near where Quebec now stands. In the mean time, Roberval not arriving in America, Cartier sailed on his return to Europe. Meeting Roberval on the coast of Newfoundland, Cartier disregarded his orders, and continued his voyage. Roberval proceeded to Canada, where he spent the winter of 1542–3, and returned to Europe in the spring of 1543. Francis I., the patron of Roberval, died in 1547, and with him terminated, for upwards of fifty years, any attempt at settlement in North America by the French. Unaided by his government, Roberval, accompanied by his brother, left France, with an intention to proceed to Canada, and was never again heard of.

So many disasters, and the distracted condition of France, under the expiring house of Valois, prevented any effective attention of the nation to Canada, until 1598. In that year, the Marquis de la Roche received from Henry IV. a commission to conquer Canada, and other countries not possessed by any Christian prince.

Twenty years before the date of the grant to De la Roche, Sir Humphrey Gilbert had received one of a similar import from Queen Elizabeth. In 1583, after repeated disappointments, Gilbert sailed to the island of Newfoundland, of which he took formal possession. On the 29th of August, his largest vessel, with all its crew, was lost near Cape Race; and

on his voyage towards England, this excellent but ill-fated adventurer was himself, with all his crew, lost on the 9th of September.

The grant of Gilbert was renewed in 1584, on May 25th, in favour of his maternal brother, Sir Walter Raleigh. The grant of 1584 expressly gave authority to Raleigh, to discover and conquer such heathenish and barbarous lands, as are not possessed by any Christian prince or people. Under the authority of Raleigh, Philip Amadas and Arthur Barlow sailed from England, in order to explore that part of North America called, by the Spaniards, Florida. Passing through the West Indies, Amadas and Barlow having reached the American coast, and examined its bays and rivers as far north as the mouth of Roanoke, returned to Europe in September 1584. The report of their discoveries was so seductive as to induce the queen to give the name of Virginia to the new acquisition to her dominions. Virginia continued for upwards of fifty years afterwards to designate in the English maps the whole coast from Florida to Labrador, and, except the island which still bears that name, superseded the term Newfoundland, imposed by the Cabots.

Richard Grenville as general, and Ralph Lane as governor, were deputed, with seven ships, to proceed to Virginia, by Sir Walter Raleigh, in 1585. The object of this expedition was to plant a colony. The fleet left Plymouth April 9th, and on the 25th of August reached the mouth of Roanoke, the point of destination. Governor Lane was left there with one hundred and ten persons, to commence settlement, and Grenville returned to England. This was the first attempt to form an actual establishment on the continent of America, made by the English nation, and failed; as in 1586, those of the colonists who had survived were found by Sir Francis Drake, in so deplorable a situation, as to induce that commander, with the written request of Governor Lane, to

convey them back to England. Some feeble exertions were subsequently made to restore the establishment, but were abortive. A few days after the departure of Sir Francis Drake, Grenville arrived with three vessels at Roanoke; but finding the place abandoned, left fifteen men to retain possession, and sailed to Europe. Early in 1587, Sir Walter Raleigh, anxious to preserve his colony, sent out three vessels and a company of one hundred and fifty people, incorporated under the title of "The county of Raleigh in Virginia," and with John White constituted as governor. The legislative authority was vested in the governor and twelve assistants.

In one of his voyages Sir Richard Grenville had discovered the mouth of Chesapeake bay, into which the colony of 1587 was directed to enter; but by some unexplained management of Fernando, their principal naval commander, these devoted people were landed on Roanoke island on the 22d of July. The new colonists found the bones of one man in one of the houses left by Lane's party; deer was found feeding, and melon vines clambering along the walls of the deserted buildings; but the fifteen men left by Grenville were gone for ever! a melancholy presage of the fate of the present colony.

On the 27th of August 1587, the governor sailed to England in quest of supplies; but of the wretched people left behind, no trace was ever since known. Thus closed the efforts of Sir Walter Raleigh, as to American colonization. No period in the sixteenth century could have been more inauspicious to colonization, than 1587. The nation was then at war with Spain; without disciplined troops; a navy scarcely deserving a name, when contrasted with the formidable fleet of its adversary; and the duke of Parma encamped at Dunkirk, with an army of fifty thousand veterans. In such a posture of affairs, neither ships, seamen, and above all, experienced naval commanders, could be permitted to engage in

any enterprise except national defence. Such men as Howard earl of Effingham, the two Drakes, Hawkins, Frobisher, and Sir Walter Raleigh, were too precious at home, to have them engaged in any distant expedition. The danger was imminent and pressing; and though absolute conquest, it is probable, could not have crowned the invaders, if their fleets and armies could have reached the English shores, yet such a shock must have produced lasting national deterioration. The Armada entered the English channel in May, where, battered by storms, and harassed by the light vessels and superior seamanship of the English, it was finally defeated, and almost annihilated. When danger is past, nations, like individuals, retain the impression, and continue measures of precaution, and stand ready to oppose a recurrence. This feeling of apprehension fully accounts for the neglect of a far distant colony, eighteen years after the defeat of the Armada.

In France, the house of Valois expired in 1589, by the death of Henry III., who was assassinated at Orleans, and Henry de Bourbon, as Henry IV., succeeded to the throne. A long series of civil and religious tumult was gradually followed by peace and prosperity, in France. As the arts of agriculture and commerce revived, individual enterprise was roused, and Canada again assumed its share of national attention. The American fisheries, about the termination of the 16th century, had commenced to engage the avidity of all western Europe, and after an interval of more than forty years, a French fleet, in 1591, sailed from St. Maloes to Canada. The same year George Drake, an Englishman, sailed up the St. Lawrence, and on his return published an account of his voyage. Drake's representations produced strong and immediate effects. Sylvester Wyatt, in 1594, found, amongst vessels of different other nations, above fifty English in St. Lawrence.

Under the grant from Henry IV., the Marquis

de la Roche sailed from France to Canada, with a colony of convicts. Success corresponded with the moral material of his crews; the plan proved abortive; De la Roche regained his native country to die of a broken heart. M. de Chauvin followed De la Roche in 1600, and was the first individual who imported Canadian furs into France. Chauvin made a second voyage in 1601; and whilst preparing for a third in 1603, died suddenly in France.

The impression on the public mind in England, by the fatal issue of all attempts made under Raleigh's patent, and by the oppressive war with Spain, were imperceptibly effaced, and in 1602, Bartholomew Gosnold had the spirit to attempt, and the honour to produce a revival of English adventure to America. In the summer of that year, Gosnold, in a small vessel with about thirty men, reached the shores of what is now Massachusetts. This active naval officer left England, by consent of Sir Walter Raleigh and his associates, and attempted a colony on Elizabeth islands. The stores and men were landed, but their obvious weakness created discontent and fear; the enterprise was relinquished, and the little colony re-embarked. This was the first attempt made by any European nation to obtain settlement in what is now designated New England.

American colonization, at this period, was supported by the able pen of Richard Hackluyt, who entered with zeal and sound judgment into the investigation of plans of discovery and settlement. By the active influence of this gentleman and others, and permission of Sir Walter Raleigh, the mayor and aldermen, and some wealthy merchants of Bristol, fitted out a small vessel of fifty tons, the Speedwell, and a bark of twenty-six tons, called the Discoverer, both commanded by Martin Pring. The object of this voyage was to discover and examine, more effectually than had been hitherto done, the

northern shores of Virginia.* Pring sailed from Milford Haven, April 10th, 1603, and reached the American coast amongst the islands of Penobscot bay. After ranging the shores to Massachusetts bay, Pring returned to Europe in August.

At the same period in which Pring was employed on the northern section of Virginia, Bartholomew Gilbert visited the more central parts, in search of the lost colony of Sir Walter Raleigh. Gilbert made the coast between Hudson and Delaware bays, about N. Lat. 40, and rashly going on shore with four of his principal men, were all destroyed by the savages. The fate of their leaders intimidated the surviving crew, who immediately set sail for Europe, without having, in any manner, fulfilled the objects of their voyage.

November 3d, 1603, an event occurred, which places in a strong light the vagueness of English and French claims in North America. Henry IV. granted to Pierre du Gast sieur du Monts, a patent for that American territory extending from N. Lat. 40° to 46°, with a commission of lieutenant general of that portion of country; and with power to conquer, colonize, and rule it, and to christianize the natives. The king of France, soon after, granted to this officer and his associates a monopoly of the fur and peltry trade, in the province of Acadia and Gulf of St. Lawrence. In the same year of Du Monts' patent, Samuel Champlaine, a native of Brouage in France, sailed up the St. Lawrence river, and made many extensive and important discoveries.

The fisheries around Newfoundland had already become highly valuable ; more than two hundred sail of vessels and above ten thousand men were engaged in that business.

* Now New England. It has been shown, that in the early periods of English colonization in North America, the name of Virginia was extended indefinitely. See p. 17.

The Sieur du Monts, with Champlaine as his pilot, and attended by M. Poutrincourt and a number of other volunteer adventurers of respectability, embarked in two vessels for America. He made first the coast of Nova Scotia, then Acadia, and anchored in Port Rosignol, now Liverpool. Coasting round Cape Sable, the immense bay of Fundy was explored. Poutrincourt fixed his residence at N. Lat. 44° 30′, where, on a fine bay, he established a village, to which he gave the name of Port Royal. This place is now the town of Annapolis, and was the first French settlement in North America.

By the joint exertions of Du Monts and Champlaine, the rivers, bays, and inlets of both sides of the bay of Fundy, and part of Maine, were discovered during this voyage. Du Monts wintered 1604–5, at the mouth of the Schoodick, now St. Croix, on a small island, at present the north-east limit of the United States, on the Atlantic coast.

In 1605, the seat of the French colonial government, if it then deserved the title, was fixed at Port Royal. This was two years before the establishment of the English colony at Jamestown, and four before the French settlement at Quebec. The two nations were each, however, emulous of discovery and colonization. The Earl of Southampton and Lord Arundel, in 1605, fitted out a small vessel to attempt a south-west passage, and gave the command to George Weymouth, who appears, from his operations, to have had, even for that period, a very inaccurate knowledge of the North American coast. He made land in about N. Lat. 41° 30′, and coasting thence north, discovered the mouth of a large river, supposed to be the Penobscot, up which he sailed for some distance, and in July set sail on his return to England.

One hundred and nine years had now elapsed since the discoveries first made on the south-east coast of North America, by the Cabots. Though

England and France, in the interim, occasionally prosecuted voyages of discovery, and though both nations, in the beginning of the 17th century, pursued their fisheries with activity, neither, if we except the trifling French port at Port Royal, had a single fortress or factory on shore. It may be noticed that, as early as 1577, the fisheries employed 150 French vessels, 100 from Spain, 50 from England, and 50 from Portugal. According to Joseph Childs, the Newfoundland fisheries, as those on the North American coast were designated, then employed 10,000 seamen. The English nation, destined ultimately to become the ruling power in that part of the North American seas, islands, and continent, now the United States and Canada, were, during the 17th and the early part of the 18th century, much less active than its rivals, particularly France. At, and for a century before, the epoch of actual colonization, English enterprise was in a great part exhausted in abortive attempts to find a northwest passage to China and India. The rage for discovering mines of the precious metals, was then also at its height. Rational projects of colonization, founded on a commercial and agricultural basis, had not been then conceived by any nation of Europe, much less by England.

Local, domestic, and political causes were, however, most efficacious in preventing England and France from emulating Spanish and Portuguese enterprise in America. In England, the long, vigorous, successful, and politic administration of Elizabeth, was, with all its beneficial effects, inadequate to heal all the wounds inflicted by a century of anarchy, civil war, or misgovernment which preceded her reign. The resources of France and the chivalrous gallantry of its people, were employed, during almost the whole of the century, in either wars of ambition, national defence, or civil tumult. Henry IV., as late as 1600, had merely succeeded in se-

curing his crown by force of arms, and had yet obtained little leisure to cultivate the arts of peace.

In both nations, finances, able seamen, and commercial knowledge were wanting; and to these moral were superadded physical impediments to foreign colonization, arising from deficiency of population. Though thus retarded, nevertheless, the germ of national force subsisted, and the spirit to give that force effect, was annually gaining intelligence by means of the press, and preparing for that long and embittered rivalry in America, which gave ascendancy to English over French power on this continent.

At the epoch of actual colonization in North America by the English, the entire coast of this continent, from Labrador to Cape Florida, was known by two general names, Newfoundland and Florida. When the Cabots made their discoveries, during the last years of the 15th century, they imposed the name of Newfoundland on the coast which they visited. This term was perpetuated in English books and maps during great part of the 16th century, and was gradually, by the imposition of other names for sectional subdivisions, restricted to the island still known as Newfoundland. (See page 17.)

On the second of April, 1512, Juan Ponce de Leon, a Spaniard, discovered the coast of North America from the West Indies, and imposed upon his newly discovered region the name of Florida. This term originated from the circumstance of De Leon having descried land on Palm Sunday; "Pasqua Florida," in the Spanish language. Florida became general to designate the south-east coast of North America, not only in Spanish, but in the geographical works of the south of Europe. No definite limit separated the Newfoundland of English from the Florida of Spanish and Italian geography. The latter like the former slowly yielded to other sectional terms, and now is confined, and perpetuated

to designate, the south-east subdivision of the United States.

Raleigh's patent of March 25th, 1584, being vacated by his subsequent attainder, a number of gentlemen, instigated principally by Mr. Hackluyt, obtained, by petition addressed to James I., a patent, dated April 10th, 1606, for that part of North America extending from north lat. 34° to 45°. As the name Virginia, given by Queen Elizabeth, had already in a great measure superseded that of Newfoundland, the former was adopted in the patent of James I. The immense zone of 14 degrees of latitude was subdivided into two, North Virginia and South Virginia, and granted to two distinct companies.

The southern, named the first colony, was granted to what was then called the London Company, and the northern to the Plymouth Company.

Such were the preliminary steps which led to a system of colonization, the most important in history, which has long since produced the United States, and prepared the foundation of another nation in Canada. The brevity of this view precludes the insertion of more than a simple chronological series of events, from the original settlement in Virginia, under the patent of 1606, up to the organization of the territory of Florida, 1821, and fixing the existing ratio of representation, 1822, of course establishing the actual political condition of the United States.

1607 April. First effective settlement of the English in America, at Jamestown, Virginia.
1610 Dutch form settlements on the Hudson.
1611 An abandonment of the colony of Virginia prevented by the timely arrival of Lord De la Ware.
1612 Second charter of Virginia.
1613 Marriage of Pocahontas to Mr. Rolfe—a most propitious era in the history of Virginia; this

guardian angel of the colony had saved the life of Captain Smith, and scattered peace and security around his dwelling.

1619 First general assembly called in Virginia.

1620 Plymouth settled; the first colony established in Massachusetts, and the second English colony in America; African slaves first introduced into Virginia.

1621 New Netherlands, now New-York, granted by the States General to the West India Company of Holland; New Hampshire granted to Gorges and Mason.

1623 Settlements began at Piscataqua; and Fort Orange, now Albany, founded.

1625 Government of Virginia vested in the crown of England.

1627 Delaware planted by the Swedes and Fins.

1628 Massachusetts granted to Henry Boswell. Plymouth company erect trading houses on Connecticut river. John Endicot arrives in Massachusetts with a new body of settlers.

1629 Boston founded. Wheelwright's grant from the Indians. Grant to Mason by the Plymouth Company of part of what is now called Maine.

1632 Charter of Maryland granted by Charles I., with equal privileges to all Christians.

1633 Severe penal laws passed in Virginia against dissenters. First settlement of Connecticut at Hartford.

1634 Charter of Plymouth annulled by the crown. Contests respecting limits between Connecticut and New Netherlands. First effective colony of Maryland planted at St. Mary's.

1635 John Winthrop governor of Connecticut. Gorges sold New Hampshire to Mason.

1636 Colony of Providence founded by Roger Williams.

1637 War in Connecticut with, and ruin of, the Pequods.

1638 Harvard College, now Cambridge University, founded. Colony of New Haven founded. Rhode Island settled by Coddington. Contest between Connecticut and New Netherlands.

1639 Written constitutions formed by Connecticut and New Haven. Privileges of Virginia restored to the colony. Maine granted to Sir Francis Gorges. First English printing press in America founded at Cambridge, Massachusetts.

1642 Kieft, governor of New Netherlands, expelled the English from the Delaware.

1643 Charter of Rhode Island granted to Roger Williams. Massachusetts, Connecticut, and New Haven unite for mutual defence against the Indians.

1650 Boundaries between Massachusetts and Connecticut fixed. First constitution of Maryland formed. Carolina founded by emigrants from Virginia.

1651 Parliament of England infringe the privileges of Maryland. Dutch built a fort at Newcastle, Delaware, and erect trading houses on Delaware river.

1652 Maine submits to Massachusetts. First American mint established in Massachusetts. Virginia submits to Cromwell.

1653 New Hampshire claimed by the heirs of Mason. Violent disputes between Connecticut and New Netherlands.

1654 English navigation act rigidly enforced in Virginia.

1655 Swedes on the Delaware submit to the government of New Netherlands, under governor Stuyvesant.

1656 Fendal's insurrection in Maryland.

1659 Royal government restored in Virginia.

1660 New Hampshire adjudged to Mason's heirs by Charles II.

1661 Settlements made by emigrants from New England, near Cape Fear river in North Carolina. Laws of England adopted in Virginia.

1662 Church of England established by law, by an Act of Assembly, in Virginia. Charter of Connecticut granted. Authority of Calvert restored in Maryland.

1663 Lord Clarendon received a patent of that part of North America between N. lat. 31° and 36°.

1664 New Netherlands conquered by the English, and granted, with great part of what is now New Jersey, Delaware, and Pennsylvania, to the Duke of York, by his brother Charles II. New Jersey conveyed by the Duke of York to Beverley and Carteret.

1665 Massachusetts had 4000 enrolled militia. Cities of Albany and New-York incorporated. Connecticut and New Haven united. Government of Rhode Island outlaws the Quakers.

1667 Constitution of Carolina formed. New Jersey becomes a distinct province.

1669 First assembly of Carolina.

1670 First settlement in what is now South Carolina, under Mr. Locke's constitution.

1673 First parliament of Carolina meets. Dutch reconquer New York, which is restored to England by treaty the ensuing year.

1675 Destructive war with the Indians under Philip, against whom are united Massachusetts, Plymouth, New Hampshire and Connecticut. Insurrection in Virginia against the royal authority: the colony contained a population of 50,000.

1676 War with the Indians in New-England ended by the defeat and death of Philip. Rebellion in Virginia under Bacon.

1677 West Jersey claimed by the Duke of York. Quakers settle at Burlington. Maine purchased from Gorges by Massachusetts.

1678 Commercial imports into New-York amount to 50,000 pounds colonial currency.

1679 New Hampshire separated from Massachusetts, and made a separate colony.

1680 Charleston in South Carolina founded, and made the seat of government. Naturalization act in Virginia. Government of West Jersey usurped by Andros, governor of New York, and restored same year. First assembly of New Hampshire met at Portsmouth.

1681 Patent for Pennsylvania granted to William Penn, and first colony under, arrives.

1682 Delaware and New Jersey, with Pennsylvania, under the government of William Penn. First frame of Pennsylvania government formed.

1683 Charter of Massachusetts vacated by *quo warranto*. New frame of government formed in Pennsylvania. Printing presses forbidden by the royal governor in Virginia.

1685 *Quo warranto* issued against the charter of Rhode Island, and a similar writ against Connecticut.

1686 *Quo warranto* issued against New Jersey. Andros appointed royal governor of New England.

1689 Revolution in England, expulsion of the Stewarts, a most desirable event in the Anglo-American colonies.

1690 First paper money issued by Massachusetts. Schenectady in New York destroyed by the French and Indians. Government of Maryland resumed by the crown. New Hampshire united to Massachusetts.

1691 New charter of Massachusetts, including Maine, granted by William and Mary. Assembly of New York again convened.

1692 Witchcraft madness in Massachusetts. Connecticut and Rhode Island resume their charters by permission of William III. University of Virginia incorporated by charter.—Treaty between New York and the Five Nations of Indians. Pennsylvania made subject to New York, by the king of England, who seizes the government of Delaware. New Hampshire irrevocably separated from Massachusetts. Protestant religion established in Maryland by law.

1693 Locke's frame of government in Carolina abrogated, and one formed agreeable to charter. William and Mary College in Virginia founded.

1694 William Penn restored to his rights over Pennsylvania and Delaware.

1695 Rice planting introduced into Carolina.

1696 Third frame of government in Pennsylvania adopted. City of New York contains 6,000 persons.

1698 Assembly of Connecticut separated into two houses.

1699 Annapolis becomes the seat of government of Maryland, and has remained so until the present time. Duty on slaves imported into Virginia imposed.

1700 Act of Assembly of New York makes it punishable with death for any popish priest who should enter that colony. Grant of lands to William Penn made by the Susquehannah Indians. Episcopacy introduced into Pennsylvania.

1701 Yale College at New Haven founded.—Rhode Island contains 10,000; New York 30,000; New Jersey 15,000; Maryland 25,000; Virginia 60,000. Government of New Jersey surrendered to Queen Anne; East and West Jersey united. New charter or frame of go-

vernment for Pennsylvania granted by William Penn. Philadelphia incorporated, and Delaware separated from Pennsylvania.

1703 Duty of 4*l.* imposed on every negro imported into Massachusetts.

1704 First Anglo-American newspaper, the Boston News Letter, published at Boston. Tonnage duty on foreign vessels imposed in Rhode Island.

1706 Assembly of Pennsylvania refuses to pass militia laws. French and Spaniards besiege Charleston, but are repulsed with great loss

1709 Paper money emitted in New York. Bills of credit emitted in New Jersey.

1710 Palatines from Germany settle on the Roanoke, and other German emigrants in New-York. New England colonies harassed by the French and Indians. Palatines from Kresheim found Germantown near Philadelphia.

1712 Virginia divided into parishes, and the clergy given a regular salary by law. Dreadful massacre in Carolina by the savages. Albany contains 1000 inhabitants.

1713 Boundaries between Connecticut and Massachusetts arranged.

1714 Spotswood first crosses the Apalachian mountains, from Virginia to the valley of Ohio.

1715 Yamassee Indians attack Charleston, and are repulsed.

1716 Government of Maryland restored to Lord Baltimore after having been usurped by the crown twenty-six years.

1717 The shipping of Massachusetts employs 3,493 sailors. Paper money issued in New Hampshire.

1719 Proprietary government in Carolina abrogated, and the base laid for an entire separation of the colony into North and South Carolina. First presbyterian church founded in

the city of New York. First newspaper in Pennsylvania, the Weekly Mercury.

1720 First royal governor of North Carolina. Trade from New York to Canada forbidden by act of Assembly of the former colony. New England, particularly Maine, severely harassed by the Indians.

1721 Inoculation for the small pox introduced into Massachusetts. Treaty with the Indians made by North Carolina.

1722 Oswego in New York founded. A population of 94,000 in Massachusetts.

1723 First paper currency in form of bills of credit issued, and made a legal tender in Pennsylvania. Beaufort in South Carolina incorporated.

1724 Bills to the amount of 30,000*l.* emitted in Pennsylvania.

1726 After a most distressing war with the savages, Maine makes peace. New Hampshire had already formed a treaty the previous year. Massachusetts receives from England an explanatory charter regulating the governor's authority.

1727 New Hampshire adopts a constitution of government. Fort erected at Oswego.

1729 Quakers and baptists relieved from paying the regular clergy in Connecticut.—Trade between New York and Canada restored. Emigrants to the number of 6000 come from Europe to Pennsylvania. Carolina permanently divided into North Carolina and South Carolina.

1730 Massachusetts supposed to contain 120,000 inhabitants ; 20,000 militia and 5,000 sailors. Treaty between South Carolina and the Cherokees. Rhode Island contained a population of about 18,000, of which 1,650 were negroes.

1731 Boundary between New York and Connecticut fixed by commissioners. Philadelphia contains 12,000 inhabitants, and the colony supposed to employ 6,000 tons of shipping.

1732 Georgia founded by General Oglethorpe, under patent from George II. Boundary between Delaware and Maryland fixed, as also that between Maryland and Pennsylvania. Tobacco made a legal tender in Maryland.

1733 First colony of Georgia established; treaty between Georgia and the Creeks, and Savannah founded. First newspapers published in New York and Rhode Island.

1735 Wilmington in Delaware founded. Oppressive royal government over New York. Destructive insurrection of the negroes of South Carolina.

1736 Colony of Highlanders arrive in Georgia. Trade of Maryland employs 130 sail of vessels; Virginia and Maryland exporting 210,000 lbs. of tobacco. In Pennsylvania 211 vessels entered and 215 cleared.

1738 The first Governor of New Jersey independent of New York, Lewis Morris.

1739 Virginia suffered severely from her co-operation with England in an unsuccessful expedition to Carthagena. Boundaries between Massachusetts and New Hampshire fixed, and in the ensuing year, 1740, confirmed, by a decree of the privy council in England.

1740 Unsuccessful expedition from South Carolina against St. Augustine.

1741 Benning Wentworth, first Governor of New Hampshire separate from Massachusetts. Dangerous conspiracy of the negroes in New York defeated. Moravians found Bethlehem on the Lehigh, Pennsylvania.

1742 Treaty of Philadelphia with the Six Nations, who release a large tract of land on both

sides of the Susquehannah. Spaniards from Florida invade Georgia, but are repulsed. New form of government in Georgia. Massachusetts supposed to have a population of 160,000.

1744 Maine contained 2485 men on the militia rolls.

1745 Claim of Mason's heirs, in New Hampshire, adjusted. Massachusetts supplies for an expedition against Louisburg, 3250; Connecticut, 500; Rhode Island, 300; Pennsylvania, 4,000*l.* for provisions.

1746 Massachusetts embodies a force of 3500 to act with the British in an expedition against Canada; Connecticut raised for the same purpose 1000; New Jersey 500; Pennsylvania 400; Maryland 300.

1747 Indigo to the amount of 200,000 lbs. exported from South Carolina. Village of Saratoga destroyed by the savages.

1748 Newark college removed to Princeton, New Jersey.

1749 The Indians of Maine submit to the authority of the colony. Grants first made by New Hampshire to settlers in Vermont. Vessels in Pennsylvania entered 303, cleared 291.

1750 Emigrants to the number of 4300 from Germany, and 1000 from Great Britain, arrive in Pennsylvania. Connecticut estimated to contain a population of 100,000.

1753 Exports from Pennsylvania, for three years, 647,317*l.* Philadelphia contains a population of 18,000.

1754 Hostilities renewed with the Indians by Maine, Massachusetts and New Hampshire. The joint exports of Virginia and Maryland amount to 632,574*l.* and the imports to 356,776*l.* Major, afterwards General Washington, given the command of a Virginia regiment, which he marched towards the Ohio; was at first

successful, but opposed by a superior force, was compelled to capitulate. Cotton first exported from South Carolina.

1755 General judicial court established in Georgia. Indians cede an extensive territory to North Carolina. Convention of colonial governors meet. Maryland by actual enumeration contains a population of 108,000. Fort Edward on Hudson river, New York, built. Rhode Island contains a population of 35,939, and New Hampshire 34,000. General Braddock defeated and slain by the French and Indians near Pittsburg.

1756 Fortifications erected along the frontier of Georgia. Fort on Tennessee river built. Fort Oswego, New York, taken and destoyed by the French.

1757 City of New York contained a population of 12,000.

1758 Exported from Virginia 70,000 hogsheads of tobacco. Treaty of Easton, Pennsylvania, with the Indians. British army under General Abercrombie defeated with great loss by the French at Ticonderoga. A force of 5000 men raised in Connecticut to invade Canada; 7000 raised for a similar purpose in Massachusetts.

1759 Ticonderoga, Niagara, and Pittsburg taken by the British.

1760 Bills of credit emitted in Georgia. War on the frontiers of North Carolina with the Indians. Counties of Lincoln and Cumberland, Maine, formed.

1761 War continues between the two Carolinas and the Cherokees. The Penobscot Indians in Maine submit.

1762 Nov. Secret treaty between France and Spain, by which Louisiana was ceded by the former to the latter power.

1763 The peninsula between the Alatamaha and St. Mary's made part of Georgia. Population of North Carolina 95,000; of Virginia 170,000; of New Jersey 100,000; of Connecticut 141,000. New York exports to the value of 54,000*l.*, and imports 238,500*l.* Maryland contains a population of 70,000. Joint commerce of Virginia and Maryland amounted in exports to 642,300*l.* in imports 555,400*l.* Peace of Paris, by which Canada was ceded to Great Britain.

1764 Massacre of the Indians at Lancaster, Pennsylvania. Large number of Germans remove to and settle in South Carolina. Brown University in Rhode Island founded. Medical school in Philadelphia founded by Dr. Shippen.

1765 Stamp Act passed by the British Parliament; produced on its promulgation the most violent tumults at Boston, and was opposed by most of the colonies, but the first legislative proceeding declatory of American rights was made in the Virginia house of burgesses. Massachusetts proposed a Continental Congress; South Carolina first met the proposition, and was followed by all the colonies, except New Hampshire, which dissented; and Virginia, North Carolina and Georgia, which were prevented from sending delegates by their respective governors. The Congress met at New York, and James Otis, of Massachusetts, took the lead on the side of law, humanity and freedom.

1766 Stamp Act repealed. The population of South Carolina 135,000; New Jersey 161,000; and New York 168,000.

1769 Louisiana taken possession of by Spain, in virtue of the treaty of 1762.

1770 Affray at Boston, between the people and the royal troops.

1771 Regulators, a lawless assemblage in North Carolina, are suppressed by Governor Tryon.

1773 Tea destroyed at Boston. Tea ships sent back to London from Pennsylvania. Assembly of Virginia appoints a committee of correspondence with the other colonies.

1774 Boston port closed by British authority; and the provincial assembly of that colony meets at Concord. British military stores seized at Portsmouth. Assembly of Connecticut erects the Wyoming valley into a town, under the charter of that province. Royal artillery and military stores seized in Rhode Island. Continental Congress met September 5th, in Philadelphia, and chose Peyton Randolph, of Virginia, their President; all the colonies, 13 in number, except Georgia, were represented, 12 having sent delegates.

1775 Battle of Lexington, and Bunker's hill near Boston. Washington made commander in chief, besieges Boston. Ticonderoga taken by the Americans. Georgia accedes to the confederation. Constitution of Delaware formed.

1776 Jan. 1st, General Montgomery defeated and slain at Quebec. March 17th, Boston evacuated. May 5th, the American army quits its lines near Quebec, and rapidly evacuates Canada. July 2nd, Constitution of New Jersey adopted. July 4th, Independence declared at Philadelphia by Congress. July 5th, Constitution of Virginia adopted. 8th, British fleet repulsed before Sullivan's island near Charleston. August 14th, Constitution of Maryland adopted. 22nd, British army lands on Long Island, and battle of Flatbush on the 27th, Americans defeated. September 14th, New York evacuated by the American army. The Colonies first designated UNITED STATES, by reso-

lution of Congress. Commissioners sent to France. October 28th, Battle of White Plains near New York. November 16th, British take Fort Washington. 18th, Americans evacuate Fort Lee. 28th, General Washington retreats over the Delaware. December 12th, Congress retires from Philadelphia to Baltimore. 13th, General Lee taken prisoner in New Jersey. 26th, Surprize and capture of 900 Hessians at Trenton.

1777 Jan. 3d, Battle of Princeton, British defeated. April 20th, Constitution of New York adopted. 26th, British destroy the stores at Danbury. May 23d, Colonel Meigs destroys the British stores at Sagg Harbour, Long Island. July 6th, General Burgoyne takes Ticonderoga. August 6th, General Herkimer defeated by the Indians. 16th, battle of Bennington, German troops under British colours and pay utterly defeated. September 11, battle of Brandywine, Americans defeated. 19th, battle of Stillwater near Saratoga, New York. 20th, General Wayne surprised at Paoli, Chester county, Pennsylvania, and his troops massacred by the British. 27th, Philadelphia taken by the British. October 4th, indecisive battle of Germantown. 6th, Forts Clinton and Montgomery taken by the British. 7th, British defeated at Stillwater; and General Burgoyne surrendered his army on the 17th, at Saratoga. 22nd, British repulsed at Red Bank. December 18th, Constitution of North Carolina adopted.

1778 Feb. 6, Treaty of alliance between the United States and France. The American frigate Randolph, of 32 guns, engages the British ship Yarmouth, of 64; former blown up. June, Commissioners arrive from Great Bri-

tain to treat with Congress; propositions of the former rejected by the latter. 18, Philadelphia evacuated by the British, who retreat towards New-York, are pursued, and on the 28th defeated by the Americans under General Washington, at Monmouth in New Jersey. French fleet arrives at Newport. July 1, Massacre at Wyoming. Aug. 29, Indecisive battle on Rhode Island. Dec. 29, British defeat the American General Howe, and take Savannah.

1779 General Lincoln takes command of the southern army in January. March 3, Battle of Briar-creek, near Savannah; Americans defeated. The British advance towards Charleston in April; invest that city, but are compelled to raise the siege May 12. Indecisive battle of Stono ferry, June 20th; the British had in the interim invaded Virginia, and taken Portsmouth and Norfolk. July 5, Newhaven plundered, and on the 7th, Fairfield, Norwalk, and Green-farms, in Connecticut, burnt by the British. 16, Stony-point stormed by the Americans under General Wayne. 19, British post at Paulus-Hook, opposite New York, surprised and taken by Major Lee. Aug. Expedition of General Sullivan against the Indians of the Six Nations. September 23, Naval battle off Flamborough Head, two British frigates captured by Paul Jones. October 4, Americans and French besiege Savannah, and on the 9th meet a sanguinary repulse in an attempt to storm the place.

1780 In January, a powerful British expedition, under Sir Henry Clinton, sailed for South Carolina. Constitution of Massachusetts adopted March 2d. March 21, Charleston besieged by the British, who surprise the Ame-

ricans at Monk's Corner, and by bombardment, May 12th, force Charleston to surrender. May 29, Colonel Buford defeated at the Waxhaws by Colonel Tarleton. June, Lord Cornwallis left in command of the British in South Carolina; Sir Henry Clinton returned to New-York. 23, Indecisive action at Springfield in New Jersey. July 12, Party of British defeated by General Sumpter. Aug. 6, Prince of Wales's regiment surprised and utterly defeated by General Sumpter at the Hanging Rock. 16, Americans meet a severe defeat at Camden, South Carolina.—September 21, Arnold escapes from West Point, and Major Andre taken by the Americans. October 7, Battle of King's Mountain, British and Tories defeated, and their commander, Colonel Ferguson, killed. Nov. 20, Colonel Tarleton defeated by General Sumpter.

1781 Jan. 1, Revolt of the Pennsylvania troops, which is soon suppressed. 17, Decisive defeat of the British under Colonel Tarleton, by General Morgan, at the Cowpens. March 15, Battle of Guilford Court-house. April 25, Second battle at Camden, Americans defeated. September, Indecisive action off Virginia, between the English and French fleets. Arnold, now a British officer, takes and burns New-London, and massacres the garrison of Fort Griswold, September 6. Battle of Eutaw Springs on the 8th, British defeated. 14, The American army under General Washington, reaches Williamsburgh, and opens the campaign against Cornwallis; invests Yorktown on the 30th, and, in conjunction with the French fleet, compels the British general to surrender himself and army on the 19th of October.

1782 Bank of North America, which had been organized in December 1781, received a charter from Pennsylvania, April 1. Indians defeated near Savannah by General Wayne. Treaty between the United States and Holland, October 8. Nov. 5, At Portsmouth, in New Hampshire, was launched the AMERICA, 74 guns, the first United States ship of the line. Nov. 30, Provisional articles of Peace.

1783 Feb. 5. Sweden acknowledges the Independence of the United States. 15, Treaty between the United States and Denmark. March 22, Congress commutes the officers' half-pay for life for full-pay for five years. March 24, Independence of the United States acknowledged by Spain, and by Russia in July. September 23, Definitive Treaty of Peace between Great Britain, France, and the United States, signed at Paris. October 18, American army disbanded by proclamation of Congress. Nov. General Washington published his admirable Farewell Address. 25, New-York evacuated by the British.—Dec. 4, General Washington takes leave of his officers; on the 23d resigned his commission into the hands of Congress, and retired to private life. Society of Cincinnati formed.

1734 Feb. First voyage from the United States to China undertaken in the ship Empress of China. St. John's college, in Annapolis, and a Roman Catholic college, Georgetown, Maryland, founded. Bank of Massachusetts incorporated.

1785 Treaty between the United States and Prussia. Athens University, in Georgia, founded.

1786 From August 22, until March 10th, 1787, civil tumult, almost amounting to actual war, agitated Massachusetts and New Hamp-

shire; but by wisdom, moderation and firmness, was in the end happily appeased. Portland, in Maine, incorporated, and Harrisburg in Pennsylvania founded. Columbia, the present seat of government of South Carolina, founded.

1787 Convention in order to frame a federal Constitution met at Philadelphia, May 25th, and agree upon one September 17, which was reported to Congress, and on October 4, by a resolution of that body, referred to each state in convention. The new Constitution was ratified, by Delaware, Dec. 7; by Pennsylvania, Dec. 12; by New-Jersey, Dec. 18; by Georgia, Jan. 2, 1788; Connecticut, Jan. 9; Massachusetts, Feb. 6; Maryland, April 28; South Carolina, May 23; New Hampshire, June 21; Virginia, June 26; New York, July 26; North Carolina, Nov. 21, 1789, and by Rhode Island, May 29th, 1790.

1787 continued. In that year New York ceded a large tract of land to Massachusetts; and South Carolina ceded her western territory to the United States. Columbia College in New York incorporated.

1788 Black cotton seed introduced into Georgia from the Bahama Islands.

1789 March 3. The new Constitution went into operation: George Washington was elected President, and John Adams Vice-President, who were inaugurated at New-York, April 30th. Seat of government of South Carolina removed to Columbia. First Roman Catholic bishop in the United States consecrated, and first Roman Catholic church in Boston founded.

1790 April. Congress accepts from North Carolina a cession of th t territory now state of Tennessee; and a territory south of Ohio

formed, May 20. September 2, Existing Constitution of Pennsylvania adopted. 20, General Harmar defeated by the Indians. Dec. Vermont and Kentucky permitted by Congress to form Constitutions. Existing Constitution of South Carolina adopted. First Census of the United States taken, and reported a population of 3,929,526, of whom 695,655 were slaves.

1791 Feb. 18, Vermont admitted into the Union as an independent state. March 3, Subscribers to the Bank of the United States incorporated by act of Congress; same day, Nov. 4, General St. Clair defeated by the Indians. Burlington College, Vermont, founded. Revenue of the United States $4,771,000, expenditure $3,797,000, and exports upwards of $19,000,000. Exports of New York alone, $2,505,000.

1792 June 1, Kentucky admitted into the Union as a state. Existing constitutions of Delaware and New Hampshire adopted. Banks of New Hampshire, Pennsylvania, and South Carolina established. Union Bank in Boston incorporated.

1793 March 4, George Washington a second time enters on his duty as President, and John Adams as Vice-President. April 29, Proclamation of neutrality issued by the President of the United States. In the autumn of this year the yellow fever ravages Philadelphia.

1794 Congress passes an act to fortify and to prepare a naval armament in the ports of the United States. July, Insurrection in western Pennsylvania, which is in the sequel suppressed without bloodshed. Aug. 20, General Wayne defeated the Indians on Maumee. Nov. 19, Treaty, usually called Jay's treaty,

between the United States and Great Britain, concluded.

1795 Aug. Treaty of Greenville, between the United States and western Indians, concluded. Oct. Treaty between the United States and Spain. Nov. Treaty between the United States and Algiers. Georgia passes an act to sell its western lands.

1796 Tennessee admitted, June 1, into the Union as a state. Western posts, Detroit, &c. delivered to the United States in virtue of Jay's treaty.

1797 Treaty of peace between the United States and Tripoli concluded in January. July 7, In consequence of increasing difficulties with France, Congress passes an act, declaring the existing treaties with that nation no longer obligatory on the United States. Oct. Constitution frigate launched at Boston.

1798 May, Congress augments the army and navy, and in June authorises merchant vessels to arm in their own defence. July 13, George Washington appointed commander in chief, with the rank of lieutenant general. Oct. 2. Massachusetts cedes to the United States Castle William, in Boston harbour. Oct. 25. The United States and British boundary in St. Croix river determined by commissioners. Transylvania university in Kentucky founded.

1799 Feb. Commodore Truxton, in the frigate Constellation, of 38 guns, captures the French frigate L'Insurgente, of 44 guns. May 26, Treaty between the United States and Tunis concluded. July 11, Treaty between the United States and Prussia. New embassy to France. American navy carrying 950 guns on 42 vessels. Seat of the government of Pennsylvania removed from Philadelphia to Lancaster. The militia of the United States estimated at 854,000.

1800 May 13, Provisional army disbanded. Mississippi territory erected into the first grade of territorial government. Indiana territory formed. Seat of government removed to Washington. Sept. 20, Convention between the United States and France concluded at Paris. Second census reported a population of 5,305,666.

1801 Contested election between Messrs. Jefferson and Burr, terminated by the choice of Mr. Jefferson for President. July 10, War declared by the United States against Tripoli. Upwards of 200 newspapers now published in the United States.

1802 April 28, Ohio admitted into the Union as an independent state. July, Louisiana ceded by Spain to France. Intendant at New Orleans shuts that port in October against the commerce of the United States. Merino sheep introduced from Spain into the United States. Military Academy at West Point established.

1803 April 30, Convention of Paris, by which Louisiana was purchased from France by the United States, for 15,000,000 of dollars. Oct. 31, The United States frigate Philadelphia struck on a rock in the harbour of Tripoli, and was taken. Dec. 20, the French colonial prefect, Laussat, delivered Louisiana to the United States. Columbia college in South Carolina founded.

1804 Feb. 16, The frigate Philadelphia burned in the harbour of Tripoli, by a body of American seamen, headed by Stephen, afterwards Commodore, Decatur. Aug. The city of Tripoli bombarded by the American fleet under Commodore Preble. Middlesex canal in Massachusetts completed. Brown University, Rhode Island, remodelled. See 1764.

1805 June, Treaty of peace between the United States and Tripoli concluded.

1806 April 25, John Pierce, an American citizen, murdered by a shot wantonly discharged from the British ship Leander, Capt. Whitby. May, Extensive and aggravated captures made by the British of American vessels, for alleged breaches of paper blockades. Nov. The Emperor Napoleon emulates the British in their spoliations on American commerce, by decrees of blockade on paper, and consequent seizure of American property. Treaty negotiated between the United States and Great Britain rejected by the President of the United States, Mr. Jefferson.

1807 June 22, American frigate Chesapeake attacked in full peace by the British frigate Leopard, and a number of American citizens killed or wounded. Nov. 11, issued the famous British orders in Council, prohibiting the trade to France by neutral nations. Dec. 17, The Emperor Napoleon issues retaliatory decrees at Milan, equally affecting neutral commerce. Dec. 22, General embargo laid on American vessels by Act of Congress. William Rose arrives as ambassador from Great Britain to the United States.

1808 Congress authorises the President to suspend by proclamation the embargo in favour of one or both nations who should rescind their decrees. The British government, by proclamation, claimed a right to impress their own seamen, wherever found; and refused to repeal the orders in Council.

1809 April 12, Congress passes an act to augment the United States army. The Embargo law repealed ; but a Non-Intercouse Act passed, forbidding commerce with either Great Britain or France. Treaty between the United

States and Great Britain negotiated with Mr. Erskine, April 23, providing for the repeal of the orders in Council and Non-Intercourse Law, but rejected by the British government and Mr. Erskine recalled. The Non-Intercourse Law renewed against Great Britain. Nov. Mr. Jackson, the British ambassador, dismissed by the President of the United States, for insulting expressions used in his communications.

1810 May 1, Act of Congress passed to authorise the President of the United States to suspend the Non-Intercourse Law with either France or Great Britain, on condition of a repeal of their respective decrees. Aug. 5, France rescinded the Berlin and Milan decrees in favour of American vessels; repeal to take effect from Nov. 1, ensuing. Third census of the United States reported a population of 7,239,903.

1811 The British sloop of war, Little Belt, on May 16, fired upon the United States frigate President, Commodore Rogers, and met a severe castigation for the rashness of her commander. Louisiana authorized to form a state constitution. Nov. 7, Battle of Tippecanoe, on the Wabash, between the Indians, and the Americans commanded by General Harrison; Indians defeated. Congress resolves to augment the army and navy of the United States.

1812 Jan. Acts of Congress empower the President to raise an army of 25,000 regular troops, to accept the services of volunteer corps to the amount of 50,000, and to put in readiness detachments of militia to the number of 100,000. June 18th, War declared by the United States against Great Britain; and on the 23d of the same month, Great Britain revoked her orders in Council. July 12, United

States army under General Hull, invaded Canada. Fort Mackinaw taken by the British. Aug. 9, Battle of Maguaga, British and Indians defeated. 13, The United States frigate Essex, Capt. Porter, captures the British sloop of war Alert. General Hull, Aug. 16, surrenders Detroit, the Michigan territory, his army, and himself, to the British. 19, The United States frigate Constitution, Capt. Hull, captured the British frigate Guerriere, Capt. Dacres. Oct. 8, British armed brigs, Detroit and Caledonia, cut out by a party of Americans from under the guns of Fort Erie. 13, Americans repulsed before Queenstown. 14, General Hopkins repulsed in an attempt on Canada. 17, United States ship Wasp captures the British ship Frolic, and both are subsequently taken by the Poictiers 74. 25, The United States frigate, Capt. Decatur, captures the British ship Macedonian. Dec. 29, Capt. Bainbridge, in the United States frigate Constitution, captured the British frigate Java.

1813 General Winchester defeated at Frenchtown, on the Raisin, by the British and Indians, Jan. 13. Feb. 23, The United States ship of war Hornet, takes the British sloop of war Peacock. Mobile, in West Florida, taken by General Wilkinson, April 15. April 27, York in Upper Canada taken by the Americans; General Pike slain in the assault. May 16, Commissioners from the United States to treat with Great Britain, sail for Europe. May, Fort Meigs besieged by the British and Indians, and General Clay defeated in attempting its relief. 27, Fort George, in Canada, taken. 29, British meet a severe repulse in an attack on Sackett's Harbour. June 1, United States frigate Chesapeake,

Capt. Lawrence, captured by the British frigate Shannon; the gallant Lawrence fell in the action. 5, Generals Chandler and Winder surprised and taken by the British. 24, Col. Boerstler surprised and taken with his detachment by the British. June 25, Fort Erie taken by the United States troops under General Brown. Aug. 1, British defeated at Fort Sandusky. 14, The British ship Pelican captured the United States brig Argus. September 4, The British ship Boxer taken by the United States ship Enterprise. Sept. 10, The British fleet in Lake Erie defeated and captured by a United States squadron, Commodore Perry. Oct 5, The British army on the Thames, Upper Canada, defeated and in great part captured by General Harrison. Nov. The expedition against Montreal relinquished. Dec. 17, Embargo imposed by Act of Congress. 19, Fort Niagara taken by the British.

1814 Jan. 22, Creek Indians defeated by General Jackson at Tallapoosa ; and on the 27th, another party of the same nation defeated by General Floyd, at Fort Defiance. March 20, The British frigate Phœnix and sloop of war Cherub, after a sanguinary conflict, capture the United States frigate Essex. 27, The Creeks defeated by General Jackson at Tohopeka. 31, Action at La Cole Mill in Canada. April 21, The United States ship Frolic taken by the British. The United States ship Peacock captured the British ship Epervier. June 28, The United States ship Wasp captured the British ship Reindeer. July 6, British defeated by General Brown at Chippeway; and again, July 25, a similar result at Bridgewater. Aug. 9, British repulsed in an attack on Stonington, Connecticut. 15,

British repulsed at Fort Erie. 24, United States army, composed chiefly of militia, defeated at Bladensburg, and Washington taken by the British. September 1, The U. S. ship Wasp captured the British ship Avon. 11, Battle of Plattsburg, and capture of the British squadron on Lake Champlain by the United States squadron, Commodore M'Donough. 12, Battle of Long Point, near Baltimore, the British defeated. September 17, Sortie of United States troops from Fort Erie, British compelled to raise the siege on the 19th. Oct. 19, British defeated at Lyon's creek. Nov. 7, Pensacola taken by General Jackson. Dec. 23, British having invaded Louisiana, and reached the bank of the Mississippi, eight miles below New Orleans, were attacked by the United States army under General Jackson, and an indecisive though sanguinary battle ensued. 24, Treaty of peace between the United States and Great Britain signed at Ghent. 28, British repulsed in an attack on the United States line below New Orleans.

1815 Jan 1, British again repulsed near New Orleans. 8, The British decisively defeated before New Orleans. 15, The frigate United States taken by the British. British army evacuate Louisiana on the 18th. Feb. 17, The Treaty of Ghent ratified by the Senate of the United States. 20, The U. S. frigate Constitution captures the British ships Cyane and Levant. March 23, The British ship Penguin taken by the United States vessel the Hornet. War declared against Algiers. April, Massacre of United States prisoners at Dartmoor, England. June 18, An Algerine frigate of 44 guns captured by the United States frigate Guerriere. Treaty of peacewith Algiers.

1816 United States Bank with a capital of 35 millions, and a charter for 20 years, established by Congress in April. Oct. Treaty between the Choctaw nation of Indians and the United States negotiated by General Jackson. Dec. Indiana admitted into the Union as a state.

1817 Jan. 1, Bank of the United States opened and commences business. Dec 11, The Mississippi territory admitted into the Union as a state. 24, The United States troops seize Amelia Island.

1818 April, The Seminoles, a tribe of Creeks, defeated by General Jackson. 22, Massacre of Indians at Chehaw, by order of a Captain Wright. May 1, Trial and execution of Ambrister and Arbuthnot. 28, Pensacola taken by General Jackson. Dec. 4, Illinois admitted into the Union as an independent state. Treaties of commerce with Sweden and Great Britain.

1819 Feb. 23, Treaty of Washington between the United States and Spain, providing for the cession of Florida by the latter to the former. Aug. but subsequently rejected by the King of Spain. Alabama admitted into the Union as a state.

1820 Jan. 11, Great fire in Savannah. March, Maine admitted into the Union as a state, and Missouri authorized to form a Constitution, which was done in the ensuing June. Nov. Constitution of Massachusetts amended in convention. Fourth census reported a population of 9,637,976.

1821 Feb. 19, Florida Treaty ratified. March, Missouri admitted into the Union as a state. July 7, Florida given up to the United States, and organized as a territorial government.

1822 Feb. Ratio of representation in the United States House of Representatives fixed at 40,000. See Art. U. S.

CHAPTER II.

GENERAL VIEW.

Taken in its utmost extent, the territory of the United States, as a physical section of the earth, extends from N. lat. 24° 27′ to N. lat. 54° 40′, and from 10° E. to 54° W. lon. from Washington City. It is bounded N. by Cabotia, or British North America; Northwest, by Russian America; West by the Pacific ocean; Southwest by the Mexican Territories; South by the Gulf of Mexico, and Florida or Cuba channel; and Southeast and East, by the Atlantic ocean.

	Miles.
This immense region has a limit in common with Cabotia or British North America, from the mouth of St. Croix river to the Chippewayan mountains,	3000
By an indefinite boundary, from the Chippewayan mountains to the Pacific ocean, say	600
Along the Pacific ocean, from N. lat. 51°, to 42°,	625
In common with the Mexican territories, from the intersection of N. lat. 42° with the Pacific ocean, to the mouth of Sabine river,	2300
Along the Gulf of Mexico, from the mouth of the Sabine to Florida Point,	1100
Along the Atlantic ocean,	1800
Having an entire outline of	9425

The exact area included within this vast perimeter, has never been very accurately determined, nor do I pretend that the subjoined table will completely solve the problem; but as I used the actual length

and mean breadth of the rhumbs formed by the lines of latitude and longitude, it is probable, that the result is not far from the real superficies of the United States.

No. I.—*Table of the Area comprised in each zone of latitude embraced by the territory of the United States, advancing from south to north.*

Between lats.		Sq. miles.	Between lats.		Sq. miles.
24° and	25°	100	38°	39°	121,000
25	26	2887	39	40	127,194
26	27	8678	40	41	128,000
27	28	9675	41	42	132,696
28	29	9000	42	43	193,250
29	30	26,370	43	44	189,864
30	31	50,124	44	45	193,360
31	32	50,000	45	46	156,272
32	33	50,000	46	47	137,550
33	34	60,500	47	48	117,900
34	35	78,374	48	49	96,420
35	36	83,300	49	50	47,200
36	37	83,300	50	51	30,660
37	38	83,300	Aggregate,		2,257,374

Exceeding by a small fraction the one twentieth part of the land surface of the earth, but within the most temperate latitudes.

The territory of the United States is naturally divided into three great sections; that of the Atlantic slope; that within the great central valley of North America; and thirdly, a slope or inclined plane extending from the Rocky or Chippewayan mountains towards the Pacific ocean.

The already most thickly inhabited part, and the seat of primitive European colonization, is an elongated, but comparatively narrow slope, falling towards the Atlantic ocean. The second section, flanked South by the Gulf of Mexico, North by the interior sea of Canada, and by a wide sweep spreading from the Appalachian to the Chippewayan

mountains, embraces the most important part of the great central valley of the continent. This expanded region is drained in great part by the innumerable confluents of the Mississippi, but having within its limits an important part of the basin of St. Lawrence or Canadian sea. Beyond the Rocky, or Chippewayan mountains, descends the great basin of Columbia or Oregon. The Pacific slope of the United States is still more extensive than that of the Atlantic; but the former continues very imperfectly known, and constitutes a very interesting *Terra Incognita* to stimulate to future discovery.

In every disquisition upon its geography, the relative position and extent of these great natural divisions ought to be carefully kept in view. Contrasted in their general aspect, separated by natural if not by impassable boundaries, and each in itself of great extent, the civil and political history of the United States, must in all future times be modified by features which no human power can essentially change.

The Atlantic slope, if extended beyond the Northeastern limit of the United States, includes the outlet of the St. Lawrence basin, and reaches Cape Charles in Labrador, the extreme Eastern angle of North America; but in the present view, however, we are only concerned with that part, stretching from Florida Point, to the mouth of St. Croix river. This range of the Atlantic coast is the extreme southeast exposure of the continent to which it belongs; and as an inquiry into the remote and proximate causes which produce its atmospheric phenomena, forms an essential part of this view, the reader will find that subject discussed in Chapter X.

A common, but very erroneous opinion, prevails that the great inclined Atlantic plain rises by gradual ascent from the ocean to a chain of mountains, and that, of course, the mountains give rise to the numerous rivers which flow down, and decorate the plain. It is a very remarkable fact, however, that

the Appalachian chain or system of mountains does not form the dividing line between the Atlantic slope and Mississippi basin.* By reference to a good physical map of the United States, it will be seen that the real line of demarcation between the Atlantic streams and those flowing into the Gulf of Mexico ranges obliquely over the Appalachian system. The Atlantic slope, therefore, bounded south-east by the Atlantic ocean, and north-west by the source of its rivers, falls with an unequal breadth and very chequered surface, from north-west to south-east. The interior limit is an indefinite and very inflected line, curving between the river sources, whilst the ocean border is formed by a most beautiful sweep into three immense bays.

Having Capes Hatteras and Florida as the extremes of its chord, and the fine estuaries of St. John's, St. Mary's, Alatamaha, with many other rivers, pouring into its base, stretches a bay, swept by that great ocean river the Gulf stream. The coast of this bay is uniformly low and sandy, with small islands, extending generally parallel to the opposing shore of the continent. The rivers are comparatively shallow at or near their efflux into the ocean. It is much to be regretted, that this bay and the two others which follow it to the north-east, had not received distinctive names; but as this has not been the case, I shall be compelled to distinguish them relatively, as South-western, Middle, and North-eastern.

* To avoid circumlocution, I have designated the Central Valley of the United States, by the name of Mississippi basin, from the most noted of its rivers. The term Basin, in this view, will be also used as generically to denote the entire space drained by a river having its outlet into a sea or ocean, such as the Mississippi, St. Lawrence, or Maumee of Lake Erie; whilst the term Valley, will be used to describe the space drained by a river falling into another; such as the Mohawk, Schuylkill, Shenandoah, or Ohio. Speaking of mountains, the term System will be used generically, and Chain specifically; thus, the system of the Appalachian or Chippewayan; and the chains of Alleghany, Blue Ridge, or Kittatinny.

If we consider the South-western bay as commencing with the northern outlet of the Bahama channel, the length of its chord will be about 600 miles, with a depth from that chord to the mouth of the Alatamaha, of about 200 miles. The Gulf stream in its passage north-east, flows almost exactly along the chord of this bay, and forms in its inner curvature an immense whirlpool. The general causes, courses, and extent of the Gulf stream, will be treated of in Chapter X., as well as the effect of this oceanic river on the climate of the continent of North America.

Cape Hatteras forms a most distinguishing landmark on the oceanic border of the United States. Without an elevation much above the waves which beat with untameable rage against its rocky front, this stormy promontory projects into the Atlantic ocean almost exactly mid-distance between Florida point and Passamaquoddy bay. Sweeping inwards from this cape of tempests, and forming a section of a very elongated ellipse, the Middle bay of the United States extends about 550 miles to the eastern salient angle of Massachusetts, with a depth from its chord to New York harbour of 150 miles. The coast of the Middle bay, like that of the South-west, is generally low and sandy ; but the rivers and minor bays of the former assume a very different character from those of the latter. St. John's, St. Mary's, St. Illa, Alatamaha, Ogeechee, Savannah, Edisto, Santee, Pedee, and Cape Fear rivers, all enter the Atlantic ocean, by narrow and very shallow outlets; neither, except the St. Mary's, admitting the entrance of large vessels. With the Neuse and Pamptico, entering into Pamptico sound directly west from Cape Hatteras, commences a new order of rivers. Pamptico sound is followed by that of Albemarle, receiving Roanoke and Chowan rivers, which is again succeeded by that immense recipient the Chesapeake bay, and that again by the wide

estuary of the Delaware, and next, the long and singular tide river or bay of Hudson.

At the efflux of the Hudson, the Atlantic waves almost reach the base of the Appalachian system, but are again repelled by the sandy border of Long Island, which in a distance of 116 miles shelters an inland gulf, differing in character only from the other sounds or bays on the Atlantic slope in having two outlets into the ocean. The outer coast of Long Island may therefore be regarded as the continuation of that of the Atlantic, and what is called Long Island Sound as the recipient of the Houssatonick and Connecticut rivers.

The beautiful and richly variegated bays of Narraganset and Buzzard, close the fine indentings of the Middle bay of the United States, which terminates with the sandy point of Malabar.

Similar to that of the South-west, the chord of the Middle bay is very nearly the course of the Gulf stream, though in its advances to the North-east, that great current increases in width but diminishes in rapidity.

Cape Cod, the eastern extremity of Massachusetts, is a promontory which constitutes another of those geographical limits on each side of which strong contrasts in natural phenomena present themselves. Here again the coast curves rapidly inwards by an abrupt sweep to the south, thence west, and gradually winding to the north-east and finally to the south-east; enclosing on three sides a sheet of water in form of a parallelogram, 200 by 180 miles. Into this north-eastern recipient are poured the rivers Charles, Merrimac, Piscataqua, Saco, Kennebeck, Penobscott, St. Croix or Passamaquoddy, St. Johns, and I might add, the Bay of Fundy.

The North-east bay is rendered distinct by a peculiar character of coast. From causes which will receive a more ample notice in another part of this view, the elevation of the ocean tides increase from

Cape Florida north-eastward, whilst their flow inland is regulated by the particular local features of the coast, or rock formation. In the South-west bay, the tides vary from 4 or 5 to 7 or 8 feet. In the Middle bay, and especially towards its north-east extremity, the height of tide is sensibly augmented; but along the whole shore of the Atlantic ocean, from Cape Florida to Cape Cod, in a distance, following the general curves of the two great bays, of upwards of one thousand three hundred miles, the tides are under 10 feet, except in heavy and long continued south-eastern gales.

Passing Cape Cod, a sudden and hitherto unexplained elevation of the tides is at once perceived. The change is so excessive and rapid, that in Buzzard's bay, the tide rises 9 feet, whilst at Barnstable, on the opposite side of the narrow intervening neck of land, they rise to 18 feet mean height. Advancing to the north-east from Barnstable, the swell increases until in the Bay of Fundy the ocean tides are the most elevated known, rising to from 40 to 50 feet. There may be other causes which contribute to produce such a difference in the Atlantic tides from Cape Florida to the Bay of Fundy, but it is probable that the principal part of the effect arises from the Gulf stream. It will be seen in Chapter X. that the current in the Florida channel is from three to five miles an hour; a velocity continued in the Bahama channel. This counter stream checks the tides; but as the ocean current widens and becomes more slow, the swell falls with more and more force on the continent.

The shores of Cape Cod are low and sandy, but with it terminates the sea-sand alluvial coast of the United States. The high land approaches the ocean, and the bays and rivers of north-east Massachusetts, and of New-Hampshire and Maine, open to the ocean between bold and swelling hills. The harbours of this North-east section of the United States

are numerous, deep, and spacious, and the two extremes of the Atlantic slope, present a complete contrast in scenery and in commercial facility.

Such are the prominent outlines of that coast which meets the wave of the Atlantic ocean, and upon which has been reared the first column of American freedom.

Along the Gulf of Mexico, in a line of 1100 miles, scarce a hill of any perceptible elevation rises to break the dull monotony of the coast; the rivers enter their recipient by narrow and shallow channels, even the outlets of the mighty Mississippi, on no one bar has 13 feet water. The best harbours are bays into which no great rivers are discharged.

To an eye sufficiently elevated and powers of vision strengthened so as to admit a view of the whole territory of the United States, the perspective would present, on the south-east an immense inflected sea line, from the mouth of the Sabine to Cape Cod, of 2400 miles, unbroken and unadorned by any of those strong features which give relief to landscape. Approaching the Hudson, far distant hills would be perceived, but still the ocean spray would continue to have a beach of sand and shells. With the Merrimac the monotonous scenery would cease; more indented and now rising into rounded promontories, the ocean border would be seen richly variegated with sheets of water, intervening between isles now smiling in all the luxury of civilized cultivation. Extend the view inland from the Atlantic ocean and Gulf of Mexico, and one vast and very gently rising alluvial plain would seem emerging from the waters, and spreading to the base of the Appalachian mountains. The ocean plain, first an almost undeviating level, would be found imperceptibly broken into hill and dale; the hills first humble in elevation, but approaching the mountains more proudly swelling into that majesty, which gives so imposing an aspect to many of the interior parts of the United States. But to give still more grandeur to this interesting

picture, the long and irregular chains and ridges of the Appalachian system, would appear stretching from south-west to north-east, through upwards of 1200 miles. Those chains and ridges, however irregular in their individual physiognomy, would be perceived arranged as a whole, with a symmetry which mocks the efforts of art, and again, exhibiting the peculiar phenomenon of constituting the far highest elevation intervening between the Atlantic ocean and Mississippi basin, without being the dividing ridge between the respective rivers of these two great sections of North America. Impressed with the common but erroneous opinion, that the Appalachian chains and ridges are the superlative of hills, and that the Atlantic scope is terminated by the base of that system, the observer would quickly perceive his error. He would discover that the Appalachian system, so far from constituting a dividing river line, that compared with the real fountain boundary, the mountains ranged obliquely; and would appear in some respects as extraneous to the general structure of that part of the continent; and as having been formed at a different period. The mountains would be seen deflecting the courses, but in no single instance as determining the recipient into which their waters are discharged. The river volumes would appear flowing down the mountain vallies, or bisecting the chains at very nearly right angles. This symmetrical inflection in the courses of the rivers, though apparent on both the Atlantic slope and Mississippi basin, is in a peculiar manner evident in the confluents of Chesapeake bay; the Delaware, Hudson, and Connecticut basins.

If a perceptible line was drawn on a good map of the United States. an observer of such a diagram, would be placed relatively as would such a one as I have supposed. Such a map would present the mountains as crossing the river line at an angle of about 30°; and what is truly worthy of remark, the

river line, from the sources of St. John's of New Brunswick, and Maine, to Florida Point, would appear to obey the inflections of the opposing Atlantic coast. The mountain system, on the contrary, almost touching the ocean on the coasts of New Hampshire, Massachusetts, Connecticut, and New York, penetrates, in its range south-west, more and more deeply into the continent, passing over New Jersey, Pennsylvania, Maryland, Virginia, the two Carolinas, Georgia, and Alabama.

If we receive the preceding data as correct, then are we bound to regard the mountains which compose the Appalachian system, as not only relatively, but specifically and generically distinct from the hills. The former stand prominent, are arranged in order, and are composed of different materials from the latter, which, indeed, are evidently the remains left by river abrasion. I would impress the distinction the more upon the mind of the reader, as it has been from confounding objects so different, that so much error prevails respecting the physical geography of the United States. Confounding the mountain chains with the river hills, again impedes a due conception of the prodigious facilities afforded by the Atlantic rivers to canal and road formation. The rivers have already done, what man could never by any combination of force have effected; torn the mountains to their bases, and made not only natural canals, but afforded the ready routes to roads through those enormous piles of earth and rock. But though less influential on the general structure of the continent, than a casual observation would lead us to suppose, the Appalachian masses constitute very strongly marked features, on an extensive scale, and give a rich finish to the great Atlantic plain. To the eye of the traveller those mountains present an almost infinite variety of landscape. Many who read accounts of foreign scenery, are unaware, that, in a distance as great as from the

Pyrenees to the Carpathian mountains inclusive, the United States afford a succession of natural pictures which, if not so magnificent, are more soft, more easily approached, and really more attractive than Alpine glaciers.

As objects of philosophical research, however, I am reluctantly compelled to observe, that no adequate idea of their relative extent, position, magnitude or number, can be gained by any existing map of the Appalachain chains. No operation which deserves the name of an accurate geographical or geological survey has ever been made of even any state section of this system. In every state map which I have seen, whole chains are omitted; whilst others are so very defectively delineated, as to render the representation deceptive. All therefore, which can be performed in the present state of geographical science, is a general view. Taken under a comprehensive survey of its physiognomy, the Appalachian system comprises an undetermined number of chains, extending in collateral ranges. Each chain is indeed formed of ridges which interlock with each other, and are frequently cut by the rivers. The ridges extend in most instances in the same direction with the chain which they contribute to form. The chains differ very materially in relative elevation and continuity, and the whole system is, with a few exceptions, in a remarkable manner devoid of peaks. No unequivocal appearance of volcanic eruption has been anywhere detected.

If we regard the Appalachian system as a whole, and extend our view from the sources of the Chatahooche and Mobile to those of Connecticut, the mountain system has a range not deviating materially from north-east and south-west; but if we examine the parts separate, we discover some very considerable inflections from the general course. These inflections have given rise to a doubt, whether the chains of the opposite sides of the Hudson

formed parts of one, or were two distinct systems, but a few moments' attention to their respective ranges is sufficient to determine that they are really parts of one system.

In Tennessee, Alabama, Kentucky, and part of western Virginia, the Appalachian chains extend between east and west, and north-east and south-west; but in central Virginia turn to north of north-east, and thus crossing Maryland enter Pennsylvania in a direction almost north and south. Here again the system bends abruptly to nearly east, and curving through Pennsylvania and New Jersey, winds to north and south, in entering New York. Thus the chains on each side of the Hudson belong to that part of the system comprised by the bend commencing in the north-east part of Pennsylvania. When we regard the chains eastward from the Hudson, we perceive them extending from north to south, and terminating towards the Atlantic ocean; but if taken in connexion, and due attention paid to the inflections already noticed, the continuity of the system will become evident.

Carrying our view west from the Appalachian chains, a new and variegated landscape opens. The great central valley of North America spreads its widely extended sweep from the Atlantic to the Pacific system of mountains; falling from the Appalachian by a gentle but broken descent to the Mississippi, and again rising beyond that great stream to the base of the Chippewayan. In its fullest extent, the central valley dips into the Gulf of Mexico, south, and mingles with the frozen marshes of the Artic ocean, north. Of that part embraced in the United States territory, the Canadian sea flanks it on one side, whilst the Gulf of Mexico closes the landscape on the other; from the two bounding mountain systems are poured the thousand streams of the Mississippi and those of its confluents. The relative extent of these great sections which we have noticed will be given in another part

of this view. In order to exhibit to the reader a condensed summary of the comparative heights of the two sections, the following tables were constructed.

Tables Nos. 2, 3, 4, 5, and 6, were in a great part formed from actual survey; the distances are therefore taken along the inflected course of the streams; but the residue of the tables being constructed from estimated elevations, the lines of ascents and descents, are direct air measures taken from point to point. It need hardly be observed, that those formed from observed elements have a superior authority over those formed from simple analogy in the fall of rivers.

No. II.—*Table of the Ascents and Descents up the valley of James River, and thence to the mouth of the Great Kenhawa, by the route of Craig's creek, Sinking creek, and Great Kenhawa.*

Route.	Miles.			Feet.	
Richmond, up James river, to the mouth of Craig's creek		200	rises		925
Up Craig's creek to the mouth of John's creek	49	249	—	345	1270
Highest spring tributary to Craig's creek	8½	257½	—	228	2498
Lowest point on dividing ridge	¼	257¾	—	53	2551
Highest spring tributary to Sinking creek	¼	258	falls	42	2509
Mouth of Sinking creek	34	292	—	924	1585
Down Great Kenhawa to the mouth of Greenbriar river	55	347	—	252	1333
Bowyer's Ferry	46	393	—	403	930
Kenhawa, at the foot of the Great Falls	21	414	—	341	589
Ohio river, at the mouth of Great Kenhawa	94	508	—	108	481

No. III.—*Table of the Ascents and Descents from tide water in James river, to the mouth of Great Kenhawa, by the route of James, Jackson's, Greenbriar, and Great Kenhawa rivers.*

Route.	Miles.			Feet.	
Richmond, up James river, to the mouth of Craig's creek		200	rises		925
Mouth of Dunlap's creek, above that of Jackson's river	25	225	—	313	1238
Lowest point on dividing ridge	16	241	—	1240	2478
Mouth of Howard's creek in Greenbriar river, near Lewisburg in Greenbriar county	12	253	falls	838	1640
Mouth of Greenbriar river	50	303	—	307	1333
Bowyer's Ferry	46	349	—	403	930
Foot of Great Falls	20	369	—	341	589
Ohio river, at the mouth of Great Kenhawa	94	463	—	108	481

These two routes were surveyed by order of the Virginia Board of Public Works, in order to determine the practicability of forming a canal communication between James river and the Ohio, by the valley of Great Kenhawa; and were inserted here with a view to illustrate the relative elevation of the Atlantic slope, the mountain valleys, and that of Ohio. When treating on the climate of the United States in Chapter X., the data on which the tables are founded, will be again referred to, as illustrative of the meteorological phenomena, depending on difference of elevation.

No. IV.—*Table of the ascents and descents, from tide water in Potomac river at Georgetown, to lake Erie at the town of Cleveland, by route of Potomac, Yonghiogany, Monongahela, Ohio, Big Beaver, and Cayahoga rivers.*

Route.	Miles.			Feet.	
Georgetown to the great falls - - - - -		12	rises		143
Harper's ferry - - -	40	52	—	39	182
Shenandoah falls - -	5½	57½	—	43	225
Cumberland - - -	130½	188	—	312	537
Mouth of Savage creek -	31	219	—	446	983
Summit level - - -	14	233	—	1503	2486
Mouth of Deep creek into Yonghiogany river - -	16	249	falls	342	2144
Down Yonghiogany river to the village of Smythfield on the United States road	22½	271½	—	739	1405
Connelsville - - -	37½	309	—	507	898
Mouth of Yonghiogany river	40	349	—	87	811
PITTSBURG - - -	18	367	—	11	800
Mouth of Big Beaver river -	30	397	—	106	694
Up the latter to the foot of the falls - - - -	1½	398½	rises	12	706
Head of the falls - -	2½	401	—	44	750
Warren - - - - -	50	451	—	104	854
Summit Level between the sources of Big Beaver and Cayahoga rivers - -	10	461	—	53	907
Level of Lake Erie at Cleveland, mouth of Cayahoga river - - - - -	60	521	falls	34[illegible]	565

No. V.—*Table of Ascents and Descents, from the level of tide water in Delaware river, to the level of Lake Erie at Buffaloe, by the route of the Schuylkill, Union Canal, Susquehanna, and Chemung or Tioga rivers, Newtown creek, Seneca lake and outlet, and the Grand Canal of New York, from Montezuma to Buffalo.*

Route.	Miles.			Feet.	
Philadelphia to Reading -		55	rises		186
Summit Level between Tulpehocken and Swatara -	34	89	—	310	496
Susquehanna, at the mouth of Swatara - - -	34	123	falls	220	276
Harrisburg - - -	13	136	rises	10	286
Sunbury - - - -	50	186	—	200	486
Wilkesbarré - - -	60	246	—	100	586
Tioga Point - - -	60	306	—	189	775
Newtown - - -	20	326	—	51	826
Summit Level between Tioga river, at Newtown, and Seneca lake - - -	7	333	—	59	885
Head of Seneca lake - -	13	346	falls	445	440
Outlet of Seneca lake - -	35	381	—		440
Montezuma on the Great Canal - - - -	20	401	—	69	371
Commencement of Rochester level - - - -	63	464	rises	126	497
Along Rochester level to the locks at Lockport - -	65	529	—	68	565
Along Lake Erie level into Lake Erie - - -	31	560	—		565

No. VI.—*Table of the Ascents and Descents, from tide water in the Hudson river at Albany, to the level of Lake Erie, by the route of the Great Western Canal of New York.*

Route.	Miles.			Feet.	
Albany to Schoharie creek		42	rises		286
Rome level at Herkimer	28	70	—	132	418
Along that level	65	135	—		418
Montezuma	38	173	falls	45	371
Lyons	24	197	rises	61	432
Rochester level	58	255	—	65	497
Along that level to Lockport and Lake Erie level	66	321	—		497
Along the latter level to Lake Erie	31	352	—	68	565

No. VII.—*Table of the Ascents and Descents, along a meridian 3° lon. W. from Washington city, and from tide water in the Atlantic ocean, to the mouth of Stono river, due N. to the margin of Lake Erie.*

Route.	Miles.			Feet.	
To intersect the line of Table No. II. at the mouth of Jackson's river, N. lat. 37° 49′.		361	rises		1238
Summit of the Appalachian system	25	386	—	1240	2478
Confluence of the Monongahela and Cheat rivers, about one mile within the southern boundary of Pennsylvania	105	491	falls	1578	900
City of Pittsburg	53	544	—	100	800
Summit level between the sources of French creek, and the small streams flowing into Lake Erie	112	656	rises	1600	1400
Level of Lake Erie	8	664	falls	835	565

No. VIII.—*Table of the Ascents and Descents along a meridian 12° lon. W. from Washington, and commencing on the margin of the Gulf of Mexico, near the S. E. pass of the Mississippi, and thence due N. to the southern margin of Lake Superior W. from Point Keweena.*

Route.	Miles.			Feet.	
To the junction of the Ohio and Mississippi rivers, at N. lat. 37°; 12° W. from W. C.		542	rises		321
Illinois river at a point between the influx of Vermillion river and Portage lake	300	842	—	80	401
Ouisconsin river	200	1042	—	760	1161
Summit level between the sources of the Ouisconsin and those streams which flow into Lake Superior	130	1172	—	450 ?	1611
Margin of and level of Lake Superior	100	1272	—	970	641

If another line was supposed extended from that of No. 8. into Lake Michigan, it would be found from its highest ascent, that no part of the intermediate space from the mouth of the Mississippi to the level of Lake Michigan, rose seven hundred feet above tide water; disclosing the very important fact, how far nature has went in advance of art in uniting by water the two great basins of Mississippi and St. Lawrence.

No. IX.—*Table of the Ascents and Descents along a meridian line drawn through the City of Mexico, lon. 22° W. from Washington City, commencing on the margin of the Pacific Ocean N. lat. 16° 38′, in the Bay of Pasahualco, of La Puebla, and thence due N. to the River Missouri.*

Route.	Miles.			Feet.	
From Pasahualco to the city of Mexico, N. lat. 19° 26′		194	rises		7460
Montezuma river, near Tecozantla - - -	80	274	falls	500?	6960
Panuco river, about 60 miles above its efflux into the Gulf of Mexico -	120	394	—	6900	60
Rio Grande del Norte, about 150 miles following the meanders above its mouth	325	719	rises	200?	260
Country contiguous to St. Antonio de Behar, N. lat. 29° 36′ - - - - -	179	898	rises	50	310
Red River of the Gulf of Mexico, or Rio Colorado of Texas, at N. lat. 32°. -	165	1063	—	120	430
Red River of the Mississippi	100	1163	—		430
Arkansas river, at N. lat. 38° 30′ - - - - -	326	1489	—	470	900
Kansas river, at N. lat. 39°	35	1524	—	50	950
Platte river, N. lat. 40° 10′	80	1604	—	60	1010
Missouri river, near the mouth of Jaques river, N. lat. 43°	160	1764	—		1010

It may be premised, that except the general level of the valley of Mexico, the ascents and descents in table No. 9, were not taken from actual admeasurement, but were estimated by analogy from the length of the streams above their recipients, and may, I presume, be taken as sufficiently correct to answer any practical purpose, and if so received

lead to very important conclusions. By reference to a map of North America, it will be perceived that meridian 22° W. from Washington City, ranges over the western territory of the United States, from Red river to the Missouri 600 miles, with a difference of level of 580 feet. It is probable, that much of the spaces between the rivers are elevated several hundred feet above the level of the streams: but the relative numbers in the table will serve for a comparative sketch of the height of that part of the United States. Two reasons combined to give a preference to the meridian 22° W. from Washington City. First, this line passes over the city of Mexico, and consequently, over the highest table land yet inhabited by civilized people in North America. The elevation of the Mexican valley has also been determined by scientific observation, and the line of the table extending thence N. depresses to near the level of the Gulf of Mexico, and in its ultimate range divides into two very nearly equal portions, the immense inclined plain between the Mississippi river and the Chippewayan mountains. In the second place, meridian 22° W. from Washington City divides the continent of North America into two not very unequal sections, and affords highly valuable points of reference when treating on climate.

Though not particularly connected with the subject before us, I may observe, that this geographical line exhibits to view the vast extent of the United States; as the point where it intersects the Missouri is very near mean distance between Cape Hatteras and the mouth of Columbia river. There is again another circumstance which gives interest to that part of North America, where long. 22° W. from Washington City crosses the Missouri; it is not far removed from the central part of the continent, and very nearly equidistant, about 1000 to 1200 miles from the Pacific and Atlantic oceans, and from the Gulf of Mexico and Hudson's Bay.

No. X.—*Table of the Ascents and Descents along a curve of the earth from Cape Hatteras to the mouth of Columbia river. These two points are respectively, at N. lat.* 35° 15′, *and lon.* 1° 30′ *E.; and at N. lat.* 46° 15′, *and lon. Washington city* 47° 53′ *W., bearing from each other by an angle deflecting from the meridians* 73° 34′, *distant* 2333 *geographic, or* 2702⅔ *statute miles, exceeding one-tenth of a great circle of the earth.*

Route.	Miles.			Feet.	
Commencing on the mean level of the Atlantic ocean at Cape Hatteras, and thence to the S. E. foot of the Blue Ridge, at the middle sources of the Roanoke		280	rises		1200
Summit of the Blue Ridge	5	285	—	1000	2200
Kenhawa river in the Great Valley between the Blue Ridge and Alleghany	30	315	falls	615	1585
Ohio river near Louisville	300	615	—	1242	343
Wabash river above Vincennes	110	725	rises	20	363
Illinois river, at N. lat. 40°	175	900	—	137	500
Mississippi river near the mouth of Le Moine river	60	960	—	20	520
Missouri river, above Council Bluffs	240	1200	—	350	870
Foot of the Chippewayan mountains on the sources of Yellow-stone river	600	1800	—	1000	1870
Summit of the Chippewayan table land	20	1820	—	1500	3370
Tide water in Columbia river	780	2600	falls	3370	
Mouth of Columbia river, and margin of Pacific ocean	102	2702			

The preceding 9 tables might be deemed sufficient to exhibit a view of the relative elevations of the great sections of the United States; but I have concluded, in order to make the comparisons still more comprehensive, to add another, comprising the basin of St. Lawrence. The latter basin or Canadian sea, is peculiar, not alone in the United States, but in America; it has, indeed, but one similar on earth, that of the Black Sea. In one important feature the Canadian basin stands alone; it rises by abrupt steps and not by gradual ascent.

The elements from which table 11 was constructed, were drawn from either actual survey or observation. From the Atlantic ocean to Lake Erie, the results are from survey; the residue were taken from Mr. Schoolcraft's Tour from Detroit to the Sources of Mississippi. This table may be regarded therefore as giving an accurate view of the relative elevation of the interesting region of which it treats.

No. XI.—*Table of the Ascents and Descents from the Oceanic level in the Gulf of St. Lawrence, up that stream and through the Canadian Lakes, and over the intermediate country by the route of St. Louis, and Sandy Lake rivers, to the Mississippi, and up the latter to its source.*

Route.	Miles.			Feet.	
Up St. Lawrence river to the head of tide water -		450			
Lake Ontario level -	200	650	rises		231
Lake Erie level - -	175	825	—	334	565
Lake Huron level -	340	1165	—	31	596
Lake Superior level -	240	1405	—	45	641
Mouth of St. Louis river into the western angle of Lake Superior - - -	380	1785			641
Up St Louis river to the S. W. Company's House	24	1809	—	4	645
To the head of Grand Portage	11	1820	—	228	873
To the foot of Portage au Coteaux - - -	6	1826	—	18	891
To the head of Portage au Coteaux - - -	2	1828	—	42	933
To the Summit level, or Savannah Portage -	100	1928	—	261	1194
Down Savannah river to the level of Sandy Lake -	21	1949	falls	24	1170
Mouth of Sandy Lake into the Mississippi - -	20	1969	—	36	1134
Source of the Mississippi	100	2069	rises	160	1294

An adequate attention to these profile tables, will tend to prepare the reader for a more due conception of the great inflections in the surface of the United States. As respects the most prominent feature on the Atlantic side of the continent, the Appalachian system of mountains, we find it rising into masses in central Virginia, to an elevation of about 2500 feet, and in the Peaks of Otter to about

4000 feet above the ocean tides, and falling by a very gradual descent to the sources of the Mohawk, where the highest table land is only 420 feet. The entire system penetrated by the ocean tides through the Hudson valley, extends in regular chains, and is altogether, perhaps, the most uniform mountain mass of the earth. It is not, as I have already observed, distinguished by any volcanic or other very elevated peaks, and in no one ridge rises to the region of perpetual snow.

The component materials are arranged with an almost utter contempt of geological formation as it is called.* As far as yet carefully examined, the Appalachian system remains undefined at its two extremities, and still more so along the sides; but taken in the fullest extent, over which the mountain chains rise to evident notoriety, from Alabama to Maine, and including all its lateral chains, the Appalachian system extends in length 1200, with a mean width of 100 miles, embracing an area of 120,000 square miles. But a small part of this superficies is, however, actually covered with mountains. The chains vary in number from six to twelve, eight would be perhaps nearer a mean, and 4 miles an adequate allowance for their bases. This would suppose about one-third of the area occupied by mountain chains, and leave two-thirds to the intervening vallies.

* It is with much reluctance I am compelled to use a term so vague and difficult in its application. Before a specification could be made of the geological structure of this great system, a previous and very skilful survey would be requisite. Such a survey has never yet been made, and in the existing state of our knowledge, as far as formation is concerned, the great mass of the system is arranged into inclined stratified rocks, whilst the two extremities are primitive. Some of the more humble northwestern chains reach into the central floetz or horizontal formation, and some of the southeastern touch the Atlantic sea-sand alluvion. In many of the mountain vallies the formations are intermingled in such wild confusion as to put all casual observation at defiance to trace their outlines, if indeed such outlines have an existence in nature.

There are, it may be observed, two kinds of vallies in the Appalachian system; one the intermediate spaces between the chains; the other the river vales. These two crossing each other in all directions, and affording a never ending variety of rock, water, hill, and mountain, with spreading alluvial plains, contribute to give to this part of the United States an indescribable attraction to the traveller.

In respect to the two kinds of valley, the Hudson river or bay stretches a line of demarcation. South-west from that remarkable tide valley, the rivers generally flow along the mountain range, or directly at right angles; on the contrary, east from the Hudson, the rivers generally flow along the mountain vallies.

If we disregard the mere ridges, and examine the platean or table land on which they stand, we discover a declivity falling from a mountain nucleus, from which flow James and Roanoke rivers into the Atlantic ocean, and Tennessee and Kenhawa into the Ohio, whilst a third series of streams are poured towards the Gulf of Mexico. To the north-east this plateau sinks slowly, and at its extremes differs in elevation about from 1600 to 1800 feet.

The depression of the Mohawk valley near Rome, is not the lowest pass through the Appalachian system. The tides in the Hudson pass the primitive ledge, and flow into the interior of the continent to the verge of the central secondary above Albany. From the latter place the Hudson valley is continued, by one of the most remarkable features in nature. What is specifically called the Hudson basin, is in reality only a part of an immense glen, extending from the Atlantic ocean, at New York harbour, in a direction a little east of north into St. Lawrence river, at N. lat. 46° 03′. This chasm is occupied by the Hudson from Sandy-Hook to Glenn's Falls; thence for 21 or 22 miles by an intermediate table land to the head of Lake Champlain, and for the resi-

due of its length into St. Lawrence, by Lake Champlain and its outlet the Richelieu or Chambly river; and inclines from the meridians only 52′, in a direct distance of 387 miles. The highest summit level between Hudson river and Lake Champlain is only 140 feet above tides in the former. Thus we are taught that an elevation of 141 feet in the Atlantic level would insulate the entire space between the Atlantic ocean and Hudson and St. Lawrence rivers, and in the actual state of nature affords a facility of canal construction unequalled on this continent.

We ought not to pass over, without particular observation, the range of primitive rock over which so many of the rivers of the Atlantic slope are precipitated. The underlaying primitive strata, exposed to the day by the rivers at Patterson, New Brunswick, Trenton, Philadelphia, Wilmington, Baltimore, Ellicot's, Georgetown, Richmond, Petersburg, and many other places more south-westwardly, reaches the ocean in the vicinity of New York, and skirting Long Island Sound, continues north-eastward and forms the base of the indented shores of Connecticut, Rhode Island, Massachusetts, New Hampshire, and Maine. Though only discoverable at points, where either the ocean or rivers have laved its base, this lengthened and evidently continuous range of rock strata constitutes a very definite physical limit. This inflected line, from New York to the Mississippi, is marked at distant intervals by falls or rapids in the bed of the streams. It is thus exposed near Patterson in the Passaic; near New Brunswick in the Raritan; near Princeton in the Millstone; in the Delaware at Trenton; in the Schuylkill near Philadelphia; in the Brandywine or Christiana in the vicinity of Wilmington; at the Falls of Gunpowder; in the neighbourhood of Baltimore; at Ellicott's on the Patapsco; at Georgetown in the Potomac; Fredericksburg on the Rappahannock; Richmond on James river; Munford

Falls on the Roanoke; the Neuse at Smithfield; Cape Fear river at Averysboro'; Pedee near Rockingham and Sneadsboro'; the Wateree near Camden; the Congaree at Columbia; and the junction of the Saluda and Broad rivers; the Savannah river at Augusta; Oconee at Milledgeville; the Oakmulgee at Fort Hawkins or Macon; Flint river at Fort Lawrence; Chattahooche at Fort Mitchell; Talapoosa at Tallossee; Coosa near its junction with Talapoosa; Tombigbee near Fort St. Stephens; and is supposed to reach and underlay the Mississippi between Natchez and Big Black river. Extending beyond the Mississippi, I have myself traced this natural limit in Ouachita river, immediately below the mouth of Bœuf river, and in Red river at the Rapids near Alexandria.

It must not, however, be understood that the ledge we have been surveying is every where actually composed of primitive rock. In Alabama, Mississippi, and Louisiana, such is not the case; it is there in most instances a loose species of sandstone; but whatever may be its components, it serves to trace a great natural line between two very different regions. From New York to the Mississippi, with the exception of the comparatively elongated peninsula of Florida, the rock ledge follows the general inflections of the coast, and in the Atlantic rivers, in most instances, arrests the tide. Although the change in the physiognomy of the earth above and below these falls, is not always distinctly defined by a rapid transition near the line of contact, yet a short distance on either side presents a contrast in vegetation, and in the face of the country. Below the river falls the aspect becomes more and more monotonous, until the whole sinks to a level scarcely more broken in many places than is that of an ocean in a calm. The rivers except from the tides are without current, or flow gently. Marshes overflown by the tides, and land floods, are extensive near the

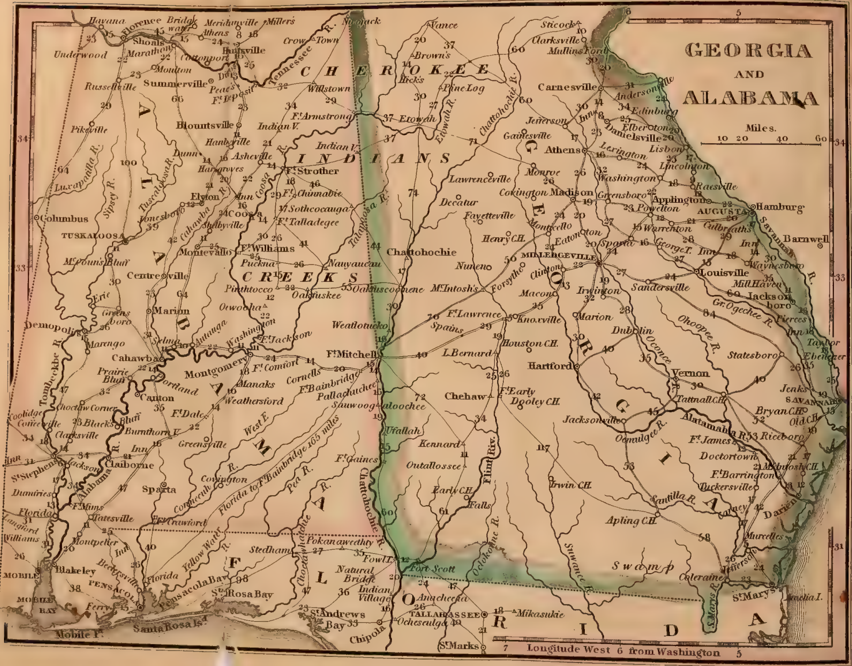
sea-coast. Above the falls all is different, and not only to the mountain bases, but in their expansive vallies, the hills meet the traveller's eye in a succession of form and elevation, round, bold, and swelling in their contour. The rivers wind through vales, rich, variegated, and gently undulating, and now under the hand of culture, smiling in all the gaiety of field, garden, orchard, and meadow. This fine hill tract spreads, if I may use the expression, round the Appalachian masses, and extends from the mouth of St. Lawrence to near that of the Mississippi. It comprises the best peopled and cultivated part of the northeastern, middle, and southern States, and the finest sections of Canada. It may be doubted whether, on so large a scale, the Appalachian region is excelled by any other on earth, in all that nature can bestow to sweeten civilized life and to give scope and vigour to the human intellect.

If the reader will turn to the sketch of the rock ledge under review, he will perceive that, in the progressive history of improvement, the largest and most wealthy cities in the United States have risen on its margin; it has therefore become a great moral and political boundary. Along this line, at present, and through all future ages, will the commerce of Europe come in contact with that of the interior regions of North America.

In this chapter has been given the extent, position, and general features of the United States. The inflections of its surface have been subjected to as rigorous delineation as the existing state of our topographical researches will admit. I would have been rejoiced that more perfect data had been within my reach in respect to the regions towards the Pacific, but those wide spread tracts have been too defectively explored to admit of much detail. What is known with certainty will be introduced in its proper place.

Before closing this subject it may be well to no-

tice a very common, but certainly a very doubtful, hypothesis. The primitive beauty and attractive varieties of the earth's surface have been themes of poetic description, but are such delineations founded on rational induction from known phenomena? On the contrary, as far as I have had means of observation in the United States, it has always appeared to me, that in very remote ages, the face of the earth was, compared with the present, much more monotonous, the river vales more obstructed, fenny, and marshy; and those genera of vegetables, indigenous to such moist flats, greatly more prevalent; but as rivers abraded their banks and deepened their channels, the superabundant earth was slowly removed and deposited as alluvion near their mouths. New tracts were formed along the oceanic border, whilst the interior was drained. Thus was gradually formed that hill and dale physiognomy, so delightful to the eye, and so well adapted to become the residence of intellectual man, and which spreads, I might almost say, interminably over the United States, but particularly round the Appalachian system of mountains.


GEORGIA
AND
ALABAMA
Miles.
10 20 40 60
Longitude West 6 from Washington
CHEROKEE
INDIANS
CREEKS
ALABAMA
GEORGIA
FLORIDA
Swamp
Huntsville
Tuskaloosa
Columbus
Montgomery
Cahawba
Demopolis
Blakeley
Mobile
Mobile Bay
Mobile Pt.
Pensacola
Pensacola Bay
St. Rosa Bay
Santa Rosa Isd.
St. Andrews Bay
Tallahassee
St. Marks
Fort Scott
Ft. Mitchell
Chattohochie
Milledgeville
Augusta
Hamburg
Savannah
Athens
Carnesville
Washington
Louisville
Macon
Darien
St. Marys
Amelia I.
Barnwell
Tennessee R.
Coosa R.
Tallapoosa R.
Alabama R.
Tombeckbe R.
Chattohochie R.
Flint Riv.
Ocmulgee R.
Oconee R.
Altamaha R.
Savannah R.
Gr. Ogechee R.
Ohoopee R.
Satilla R.
S. Marys R.
Suwanee R.
Ocklokonee R.
Choctawhatchie R.
Yellow Water R.
Conecuh R.
Pea R.
Etowah R.
Eufallah
Florida to Ft. Bainbridge 165 miles

J Knight Sc.

CHAPTER III.

GEOGRAPHICAL VIEW OF THE SOUTHERN SECTION OF THE ATLANTIC SLOPE OF THE UNITED STATES.

In the progress of our survey we have examined the general position, direction, and extent of the Atlantic slope; we have reviewed its three great divisions of mountain, hill, and alluvion. The elevation, extent, and most striking peculiarities of each section have been noticed; but before proceeding to a detailed view of the rivers and mountains, I have introduced some remarks on the peculiar physical construction of the peninsula of Florida. It may be observed, that Long Island and the sound which separates it from the continent are only distinguished from other islands and sounds, along the Atlantic coast, by the single circumstance of the sound having two outlets, and of course, insulating that strip now known by the descriptive name of Long Island.

The latter, in every other general feature, has a very strong resemblance to those four peninsulas; that of southern New Jersey, almost insulated by tide water in the Delaware bay and river, and by Amboy bay, and Rariton river; that of Cape Cod, still more nearly cut from the mainland by Buzzard's bay and the deep south-west indenting of Barnstable bay; thirdly, that extensive tract encircled within a few miles by the tides of the Delaware and Chesapeake bays; and fourthly, the great peninsula of Florida.

If our maps are even tolerably correct, Florida is connected with Georgia, by a flat country, over

which the tides probably once flowed, if the hypothesis of the abasement of the Atlantic level is founded on fact. The tables of ascent and descent given in Chapter I. are calculated on the supposition of uniform level along both coasts of America; an assumption, however, which demands considerable modification. From the circumstance of the Gulf stream flowing out of the Gulf of Mexico, into the Atlantic ocean, it is demonstrated, that the former is elevated above the latter, and that Florida rises as an immense wing dam, confining the water of the Gulf of Mexico from falling with irresistible weight into the Atlantic ocean. From this inequality of level, if ever a canal is opened over Florida, the locks on the Atlantic side must exceed those on that of the Gulf of Mexico.

The entire peninsula seems based on shell limestone of comparatively recent formation, and of every degree of induration, from compact building stone, to loose hillocks of sand and shells. The central part of the country rises into hills of no great elevation, resting on the calcarious strata, and from which the surface slopes imperceptibly towards the contiguous ocean and gulf, and also towards the great body of the continent. It is an interesting subject of inquiry, whether an artificial channel could not be opened from the Gulf of Mexico into the Atlantic ocean, with a current from the former into the latter recipient? As it is situated, Florida greatly modifies the maritime phenomena of the United States, and may admit, it is probable, of an improvement or change by the hand of man, which may, though to a very limited degree, influence the course of one of the greatest aquatic currents on the globe, the Gulf stream.

Hitherto we have been examining the solid structure or skeleton of the Atlantic slope, but we now are to traverse its rivers, those channels of living water, which give activity, beauty, and elegance

to the face of the earth, and without which, barbarism, gloom, and poverty would prevail for ever.

The rivers of this region are divided by the hand of nature into two sub-systems, by the lengthened tide valley of the Hudson. These two divisions I shall place before the reader in the order I have already pursued with the previous survey, advancing from south to north.*

In this order St. John's river, of Florida, appears first. On the principles I have adduced, this river partakes much more of the character of an inlet or sound, than that of a river in the real acceptation of the latter term. In Tanner's map, the extreme southwestern sources of St. John's are laid down at N. lat. 28° 15′, from whence by the name of Ocklawaha it flows north-west eighty miles, and then curving gradually to an east course, unites with the St. John's proper at N. lat. 29° 21′. The latter branch rises at N. lat. 28° 38′, and pursuing a north-west course of about 60 miles, receives the tributary I have noticed. Below their junction the united water flows by a very tortuous course 130 miles, falling into the Atlantic ocean at N. lat. 30° 19′, long. 4° 36′ W. from Washington City. Composed of lakes and interlocking inlets, both branches of St. John's appear on the map with a strong resemblance to other narrow sounds along the American coast. The source of the St. John's proper or eastern branch rises within a few miles from the Atlantic ocean, and flows into the peninsula. The intermediate strip between the river and the ocean of about 120 miles long, and with a mean width of from 20 to 25,

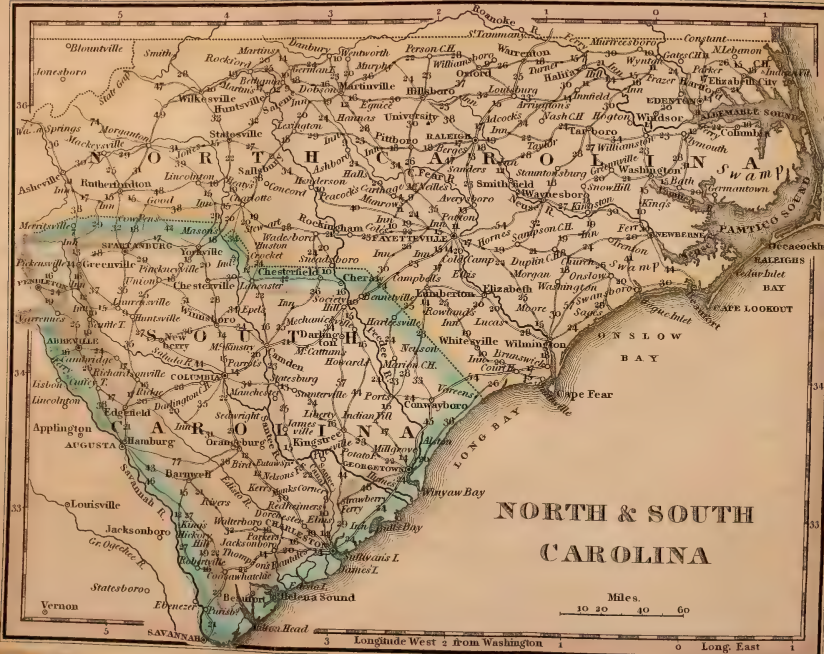
* It may be noted, that in estimating the length of rivers, their courses are in this view taken comparatively, and their minute bends disregarded. Much distortion is frequently given to a country by estimating the meanders of rivers; and it is from this cause, that the rivers of America are almost uniformly represented longer than they are in fact, when compared with the streams of the other parts of the earth.

is flat, in part marshy, and otherwise presenting the common traits of those insular tracts scattered along the coast of the United States.

The St. John's is rather important from the singularity of its structure than from its value either as a commercial basin, or a tract whereon a dense population could find subsistence. Its bar affords 15 feet water at the best tides, and within the bar, the river channel rather exceeds that depth to Lake George 130 miles above the mouth. Lake George is one of the enlargements of St. John's proper, above the entrance of Ocklawaha ; and with a depth of 12 feet, is about 18 miles by 12 in extent. Above Lake George the river again rather deepens and is navigable 40 miles higher. The Ocklawaha is also navigable some distance above its mouth, but both branches have more the appearance of irregular canals than rivers.

From the outlet of St. John's, in a distance of above five degrees of latitude, to the extreme southern point of the peninsula, no river of any magnitude flows from the interior, nor does the coast afford harbours in any proportion to a distance of 370 miles. From every data we have yet procured, the far greater part of the surface of southern Florida, is open, flat, and marshy ; even the sources of St. John's are undefined, and what is a striking fact in the natural history of that river, though a fresh water stream at its mouth, its waters are often rendered brackish near its head, from the waters of the Gulf of Mexico, being driven by the winds into the lagoons which intersect the intervening morasses.

St. Mary's, with the inconsiderable river Nassau between, follows St. John's. The St. Mary's, St. John's, St. Illa, and Alatamaha, afford one amongst many other examples of a similar nature in the United States. These rivers in their inflections correspond to each other with an exactness, which warrants the induction, that such uniformity must


NORTH & SOUTH
CAROLINA
Miles.
10 20 40 60
Longitude West 2 from Washington
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NORTH CAROLINA
SOUTH CAROLINA
RALEIGH
COLUMBIA
FAYETTEVILLE
NEWBERNE
EDENTON
SPARTANBURG
PENDLETON
ABBEVILLE
AUGUSTA
GEORGETOWN
CHARLESTON
SAVANNAH
Wilmington
Cape Fear
Cape Lookout
Ocracock In.
Raleighs Bay
Onslow Bay
Long Bay
Winyaw Bay
Albemarle Sound
Pamtico Sound
Roanoke R.
Savannah R.
Edisto R.
Santee R.
Pedee R.
Saluda R.
Neuse R.
C. Fear R.
Gr. Ogechee R.
Swamp
Blountville
Jonesboro
Wilkesville
Morganton
Asheville
Rutherfordton
Lincolnton
Charlotte
Salisbury
Statesville
Concord
Lexington
Hillsboro
Oxford
Warrenton
Louisburg
Halifax
Tarboro
Washington
Plymouth
Columbia
Smithfield
Waynesboro
Kingston
Elizabeth
Lumberton
Rockingham
Wadesboro
Cheraw
Chesterfield
Lancaster
Camden
Yorkville
Chesterville
Greenville
Union
Laurensville
Winnsboro
Newberry
Edgefield
Hamburg
Barnwell
Orangeburg
Beaufort
Sumterville
Darlington
Conwayboro
Kingstree
Walterboro
Louisville
Jacksonboro
Statesboro
Vernon
Ebenezer
Purisburg
Hilton Head
St. Helena Sound
Sullivan's I.
James I.
Edisto I.
Bulls Bay

J. Knight Sc.

have arisen from some general cause, existing in the country over which those streams flow.

The sources of St. Mary's have been traced to above N. lat. 31°. flowing thence with a most tortuous channel into the Atlantic ocean, which it enters directly west from the pass between Amelia and Cumberland islands, after an entire comparative course of 110 miles. The sources of St. Mary's interlock with those of Suwanne and St. Illa rivers. General course from west to east, entering the ocean at N. lat. 30° 42′, long. W. C. 4° 37′ W.

St. Mary's river is of importance from the depth of water on its bar, having twenty feet at mean tides, or more than is found in any other channel along the Atlantic coast of the United States, south-westward from the Chesapeake.

St. Andrew's sound receives the St. Illa river almost exactly on N. lat. 31°. Of little importance as a channel of commerce, the St. Illa, in respect to space drained, is a much more considerable river than St. Mary's. The St. Illa rises at N. lat 31° 42′, long. W. C. 6° W., interlocking sources with the Suwanne and lower small branches of the Oakmulgee, and drains some of the south-eastern counties of Georgia.

The St. Mary's in its lowest part separates Florida from Georgia, draining part of both, but the St. Illa basin is entirely within the latter state.

From Florida point to the mouth of St. Mary's the coast of the Atlantic ocean inclines westward of a meridian one degree and a half of longitude in five degrees of latitude, but at the mouth of St. Mary's the coast assumes an inclination a little east of north, 45 miles to the opening of Alatamaha sound. As in almost every other instance of the rivers of this part of the Atlantic coast, the great volume of the Alatamaha enters the ocean between the salient points of two coast islands. St. Simon's and Sapelo islands bound the various outlets of the Alatamaha, the Dory inlet be-

ing merely the north-east entrance into the port of Darien, situated on one of those outlets.

Advancing along the Atlantic shore from Cape Florida, the Alatamaha is the first stream, the remote sources of which are drawn from the south-eastern spurs of the Appalachian system. It is formed by two branches, the Oconee, and Oakmulgee, of nearly equal length and volume. Both confluents rise in Hall county, Georgia, N. lat. 34°, long. W. C. 7° W., and flowing nearly parallel to each other at a mean distance of 40 asunder, 160 miles, the western branch of the Oakmulgee turns by a gradual bend to north-east, joins the Oconee at the point where Telfair, Montgomery, and Tatnall counties have a common angle, N. lat. 32° 1′, long. 5° 33′ W. Below the union of the two great branches, the Alatamaha, now a spacious stream, inflects a little east from the general course of the Oconee, and after a comparative distance of 90 miles, is lost in the Atlantic ocean at N. lat. 31° 19′, long. W. C. 6° 22′ W., between Glynn and M'Intosh counties.

The sources of the Alatamaha interlock with those of Savannah, Ogeechee, Cambahee, and St. Illa, flowing into the Atlantic ocean, and with those of Chatahoochee, Flint, and Suwanne, entering the Gulf of Mexico. As a navigable basin the Alatamaha has 14 feet water on its bar, and the depth is increased within and for some distance above the port of Darien. Boats of 30 tons are navigated up the Oconee to Milledgeville, and an equal distance up the Oakmulgee.

From the mouth of St. Mary's to Alatamaha sound, the Atlantic coast is seen gradually curving eastward; at the latter sound, the eastward curve is increased to very nearly north-east, which course is maintained to the efflux of Savannah river. In a distance of 55 miles, the coast is decorated and broken by Sapelo island and sound; St. Catherine's is-

land and sound ; Ossabow island and sound ; Wassaw island and sound; and finally, Tybee island, at the entrance of Savannah river.

In the intermediate space between the Alatamaha and Savannah, Ossabow sound receives the only river, the Ogeechee. This small stream is formed by two unequal branches, the Ogeechee and Camouchee. The Ogeechee proper rises in Greene county, in Georgia, and flowing thence S. S. E. 160 miles, receives the Camouchee from the right at N. lat. 32°, continues 15 miles farther, and opens into Ossabow sound. The extreme eastern angle of Ossabow island is at N. lat. 31° 50′, long. W. C. 4° 2′ W.

Our survey now brings us to the review of a river remarkable as forming in all its course from the Appalachian mountains to the Atlantic ocean, in a distance of 250 miles, and in a course of S. S. E., a boundary between Georgia and South Carolina. The general course of the Savannah is in an unusual manner direct, and compared with its length, drains the least area of any river on the Atlantic slope. The Savannah river has 17 feet on its bar, and is navigable with large vessels to the city of Savannah, and for river vessels to Augusta.

We may here pause on our course, and return to a summary review of that region comprised in the three basins of Alatamaha, Ogeechee, and Savannah. Taken together those three basins cover an area of 27,300 square miles. Extending from the verge of the central secondary formation, crossing the primitive, and terminating in the mixed river and oceanic alluvion, this portion of the United States comprises the greatest difference of climate and vegetable production to be found within any equal superficies. The surface presents all the variety of scenery, from the monotonous oceanic border, to the elevated, rugged, and variegated mountain ridges.

In the higher sources of the Savannah, we are led to the first point where the fountains of the Atlantic slope and those of the Mississippi approach. Here the branches of the Tennessee, and those of Savannah interlock, at N. lat. 35°, long. W. C. 6° W. on a plateau at least 1500 feet above the Atlantic level; and as that height in feet is a fall equivalent to four degrees of lat., consequently, the temperature of the region before us presents all the varieties found in the opposing ocean margin in extremes of seven degrees of the meridian.

With the Atlantic border of Georgia commences the real tropical climate of the United States. It will be shewn when we are expressly discussing the subject of climate, why the temperature is so much lower on any given latitude upon the shores of the Atlantic ocean, than on the banks of the Mississippi; and why the zone of tropical vegetables is so much more southward on the former, than on the latter section of the American continent. As the mouth of the Savannah river is a point of separation in some manner between two climates, it may be well to remind the reader that N. lat. 32°, and long. 4° W. from W. C. intersect about 5 miles almost directly west from the bar.

The Atlantic coast, curving eastward from the mouth of St. Mary's, assumes above Savannah bar a general course, but with partial inflections, of N. 56° 40′ E., which is continued to Cape Hatteras, within a small fraction of 400 miles. With this great change in direction, the character of coast from Cape Florida, is sustained by the far greater part of the maritime border of South Carolina, and along the latter the intricacy of inlets and islands is increased. Jones', Burtle, Dawfuskie, and Hilton islands, succeed each other, in a distance of 20 miles from Savannah bar to Port Royal entrance. This latter opening, designated Broad river in the interior of

the country is the estuary of a number of small creeks, the principal of which the Coosawhatchie rises in the southern part of Barnwell district, flows thence into and crosses Beaufort district, gradually widens near the ocean, where it changes to the name of Broad river, and finally enters the Atlantic by Port Royal entrance. The entire length of the Coosawhatchie and Broad rivers united is about 70 miles, over a country uniformly flat, and in a great part marshy, receiving the Atlantic tides to near its interior extremity. The port of Beaufort, on one of the numerous inlets which wind through this labyrinth of creeks and islands, is the commercial depot for Port Royal entrance. The port stands 14 miles north, and within Hilton head the southern and salient point of the entrance. Hilton head is at N. lat. 32° 12′, long. W. C. 3° 41′ W.

St. Helena sound, the most spacious opening from Cape Florida, in a distance of almost five hundred miles, is the recipient of two considerable streams, the Combahee and Edisto rivers, and also of some creeks and inlets of lesser note. It is one of the peculiarities in the history of human society in the southern states, that no city of great consequence has risen on the large rivers, if we except New Orleans and Savannah. An explanation of this anomaly is to be sought in the character of the rivers themselves. Shallow and intricate, their capacity of conveyance bears no proportion to their apparent magnitude. St. Helena sound is, including the mouth of south Edisto river, near eight miles wide, and narrowing inland ten or twelve miles, terminates by the influx of Ashepoo, Combahee, and Coosaw rivers; the latter an inlet from Broad river. With all this appearance of a spacious series of havens, the depth of water forbids the rise of any commercial depot of much consequence.

It has been already noticed, that St. Helena sound at its north-east angle receives one branch of Edis-

to river. The latter composed of two confluents, north Edisto, and south Edisto, both rising in Edgefield district, and flowing south-east 60 miles, uniting on the border between Barnwell and Orangeburgh, continue the original course thirty miles into Colleton: thence turning to nearly due south 25 miles, the stream divides into two unequal outlets. One under the name of south Edisto maintains a southern course of twelve miles into St. Helena sound. The other, flowing south-east fifteen miles, enters the Atlantic ocean by the name of north Edisto.

The three outlets of St. Helena sound, and the two Edisto's, are so blended, as to be properly considered only the estuary of one basin. The mouth of south Edisto river into St. Helena sound is at N. lat. 32° 28′, long. W. C. 3° 21′ W.

Between the two outlets of Edisto is inclosed the fine island of Edisto, which advancing north-east is succeeded by a congeries of other islands, the principal of which are Wadmelaw, John's, and James' islands, composing Colleton and Drew's parishes in Charleston district. Wadmelaw, with the two minor islands of Seabrooke and Kiawaw, are separated from the continent by north Edisto and Stono rivers. The former, for about ten miles after separating from south Edisto, is known locally as Dawho river, and which again dividing, is continued into the ocean as north Edisto by the right branch, whilst that of the left, assuming the name of Stono river, in a course of 35 miles encircles Colleton parish, and finally enters the Atlantic ocean in Stono inlet. In its perimeter from north Edisto, Stono river flows first north-east 15 miles, where it receives Wallace's branch, and turns to a little south of east, 5 miles, under the name of Wappoo cut. At the eastern termination of the Wappoo cut, Stono river divides; the main volume turning south flows, as I have shewn, into Stono inlet; but the other branch, by

the name of Wappoo creek, east into Ashley river opposite Charleston.

A small basin of about thirty miles square, or 900 square miles, opens into the Atlantic ocean by the most eligible harbour along the south-western coast of the Atlantic ocean in the United States. Not from superior depth of water, in which it is exceeded by St. Mary's river, and equalled by that of Savannah, but in its position and spacious sheltered harbour, and from an early settled and well cultivated interior, Charleston has risen into the largest city on the Atlantic coast of the United States, south from Chesapeake bay.

The city of Charleston is situated on the point formed by Ashley and Cooper rivers, though the far greater part of the commercial business is done on the latter. The city is about six miles within the bar, and a small fraction above four west from Fort Moultrie, on Sullivan's island, and two and a quarter north-west from Fort Johnson, on James' island. The channel admits vessels of 16 feet draught. The city is at N. lat. 32° 43′, long. W. C. 2° 54′ W.

The basin of Charleston has been artificially united to that of the Santee by a canal of 22 miles, from the head of Cooper river into Santee, 50 miles, a little west of north, from the city of Charleston.

An extent of coast of 55 miles, still broken by inlets and islands, reaches from Charleston harbour, to south Santee entrance, which three miles farther is succeeded by the north entrance of the same stream, and again at eight miles from the latter, by the wider opening of Winyaw river, or Georgetown entrance. Winyaw river or bay is itself merely the estuary of Black river, Great Pedee, and Waccomaw rivers.

There is so small an interval of coast between the two outlets of Pedee and Santee, that without much violence to physical correctness they might be united into one basin; but the two rivers differ so very

widely in their structure, that a separate notice is indispensable. The Santee is formed by two great confluents, the Congaree, and Wateree. Having their remote sources in the south-eastern vallies of the Blue Ridge, the Saluda rises in Picken's and Greenville districts, South Carolina; the Ennoree, in Greenville and Spartanburg districts; and Broad river in Rutherford county, North Carolina, all interlocking sources with the French Broad branch of Tennessee, between N. lat. 35° and 35° 35′, long. 5° W. from W. C. Converging to a common point of influx, and by a general course of south-east, the united waters of those minor rivers meet at Columbia, and by a singular concurrence, on the verge of the primitive ledge over which the volume passes, and is hence known as the Congaree. The site of Columbia and head of Congaree, is again rendered remarkable by being almost exactly upon the intersection of N. lat. 34°, and of long. W. C. 4° W. Continuing a south-east course forty miles below Columbia, the Congaree receives the Wateree from the north.

Though inferior to its rival in mass of water, the Wateree considerably exceeds the Congaree in length of course. By the name of Catawba, the remote sources of the Wateree drain Burke county in North Carolina, and in part rise as high as N. lat 36°, long. W. C. 5° W. Interlocking with the head waters of French Broad, Nolachucky, Great Kenhawa, and Yadkin, and winding N. E. by E. sixty miles along those of Broad river, the Catawba leaves Burke, and forming the boundary between Iredell and Lincoln counties, gradually assumes a course of S. S. E. 150 miles, entering South Carolina between Lancaster and York districts, and above N. lat. 35°; and joins the Congaree at N. lat. 33° 45′, forming the Santee.

The Santee with its branches, though navigable for boats far above the primitive ledge, is deficient

as an opening to the ocean, though steam boats ascend to Columbia.

With the basin of the Pedee, terminates that character of coast which we have found prevailing from Florida point. In this range we have seen rivers of greater or less magnitude dividing into numerous branches before entering the Atlantic ocean. The coast, rising by a very slow acclivity, is cut, by innumerable channels, into islands, the surface of which are but little elevated above high tides. The rivers, comparatively, in a peculiar degree shallow, and in every instance deeper within than on their bars. The line of coast, though generally uniform as to course from point to point, is very irregularly indented. Along this part of the Atlantic slope, through 600 miles, the inlets are, as we have seen, shallow and impeded, but are excessively numerous, particularly from St. John's river to Santee and Pedee, inclusive.

With the Pedee, however, a new order of coast commences, and which, if Long Island is included, continues to Montaug point, along 800 miles. In the latter instance, the range from point to point stretches in regular lines or curves, with long sand isles lying parallel to the main shore. The rivers opening towards the ocean in very wide sounds or bays.

Winyaw bay, or Georgetown entrance, opens to the ocean at N. lat. 33° 11′, long. W. C. 2° 11′ W. The main confluent of this basin, the Pedee, designated near its source by the name of Yadkin, has its extreme fountains in the Blue Ridge, N. lat. 36°, long. W. C. 4° 40′ W., interlocking sources with Catawba, Holston, and Great Kenhawa rivers; and flowing thence N. E. by E 80 miles over Wilkes and Surry counties of North Carolina, turns abruptly to S. S. E. 100 miles, enters South Carolina between Marlborough and Chesterfield districts, and continuing the latter direction 80 miles, is augmented from the west by a considerable tributary, Lynche's

river, and 20 miles lower receives a more important branch from the north, Little Pedee. Below the junction of the two Pedees, the united stream turns to S. S. W. 30 miles to the port of Georgetown. At the latter place, the name of Pedee is changed to that of Winyaw bay, into the head of which is discharged, besides the Pedee, Black river from the west, and Waccamaw from the north-east.

The latter confluent of Winyaw bay, though humble in respect to either volume or length, is remarkable from its peculiar position and course. Rising in Bladen county, North Carolina, N. lat. 34° 40′, flows south 50 miles, enters South Carolina, in Horry district. The Waccamaw, where it passes the line between the two Carolinas, approaches within eight miles of the Atlantic ocean, but instead, however, of continuing its course into the ocean, it turns to S. W. parallel to the opposing coast, from which it flows at a distance varying from 3 to 8 miles by comparative courses 60 miles, and finally enters Winyaw bay opposite Georgetown.

In the future improvements of inland navigation along the Atlantic coast, a most important link may no doubt be afforded by the peculiar course of this small but remarkable river.

From Winyaw point to Cape Fear, by the name of Long Bay, the Atlantic coast curves inward, presenting a section of an elongated ellipse, and in a distance of one hundred miles, winds with a regularity which mocks a work of art, and without a single inlet worthy of notice. N. lat. 34° and long. 1° W. from W. C. intersect in the mouth of Cape Fear river. The most considerable stream flowing entirely within North Carolina, Cape Fear river, rises in Guildford and Rockingham counties, N. lat. 36° 20′, long. W. C. 3° W., and flowing by a general course S. E. 200 miles, receiving a number of confluents of moderate size, enters the Atlantic about 10 miles north from Cape Fear.

The basin of Cape Fear, though not very extensive, is of consequence as a commercial inlet. Two of the most important seaports of North Carolina are in this basin; Wilmington, on N. E. Cape Fear river, and Fayetteville, on the main stream, are wealthy and prosperous emporia; the former 30, and the latter 120 miles within Cape Fear.

By another elliptical curve, with an astonishing resemblance, both in extent and form, to that from Winyaw to Cape Fear, the Atlantic coast again sweeps from the latter to Cape Lookout, under the name of Onslow bay. New River inlet, from Onslow county, North Carolina, is the only entrance of note which breaks the monotony of the coast in 120 miles. A series of long, narrow, and low sandy islands, as regular as the opposing coast, follow each other, leaving a very confined sound within.

Cape Lookout, with a strong resemblance to Cape Fear, is only a salient point of a long coast island, and projects into the Atlantic ocean at N. lat. 34° 34′, long. W. C. 0° 22′. Leaving Core and Pamptico sounds within, and again forming another elliptical curve inwards, the Atlantic coast stretches 80 miles from Cape Lookout to Cape Hatteras. Extending from N. E. by E., and S. W. by W. 70 miles, with a mean width of 15, Pamptico sound spreads west from Cape Hatteras islands, and terminates inland by the wide bays of Neuse and Pamptico rivers.

Neuse river rises in Person and Orange counties, North Carolina, interlocking sources with the confluents of Cape Fear, Roanoke, and Pamptico. The higher part of its course is S. E. 80 miles into Johnson county, where it turns to S. E. by E. again, 80 miles, to Newbern, below which it gradually spreads into a semi-circular bay of forty by from three to five miles, which in its turn opens into the wider expanse of Pamptico sound.

Interlocking with the lower and more humble branches of Roanoke, the Pamptico drains the space

between that river and the Neuse. Rising in Granville and Warren counties, by several branches, the general course of the Pamptico is S. E. by E., 100 miles to Washington, where it dilates into a bay, which thirty miles still lower terminates in Pamptico sound.

Pamptico sound is connected on the south-west by Core sound with Onslow bay; and on the north-east with Albemarle sound, and opens into Raleigh's bay by Ocracoke inlet. The latter may indeed be considered as the mouth of the sound, and has 14 feet water at mean tide. Ocracoke inlet is about 3 miles north-west from the point in the ocean where N. lat. 35° and long. W. C. 1° E. intersect, and is distant about 30 miles from the mouths of Neuse and Pamptico bays.

We have now reached the north-east termination of the great southwest bay of the Atlantic slope. It has been already observed, that Cape Hatteras forms at once a physical limit of climate and of geographical lines of coast. Projecting a salient angle into the Atlantic ocean, this storm and ocean beaten promontory receives the full force of the Gulf stream from the Bahama channel. The reefs or long sandy islands, for 30 miles on each side of Hatteras, present an unbroken front to the never tiring surge; the Pamptico sound within, offering in its tranquil surface a curious contrast to the eternal billowy contest without. It is here, ever since the discovery of America, that the genius of the tempest seems to have chosen his abode.

With Cape Hatteras the Atlantic coast turns to a small inclination west of north, which course is sustained 130 miles to Cape Henry or entrance into Chesapeake bay. In this latter expanse, the ocean border continues to present its regular series of islands and narrow inlets. In the rear of this chain the interior is penetrated by the deep indenting of Albemarle sound. Lying nearly parallel to each

other, but by the different tending of the respective coasts, Pamptico sound sweeps along the course of the opposing Raleigh's bay, whilst Albemarle stretches directly into the continent 60 miles, and receives into its head Roanake and Chowan rivers.

The basin of the Roanoke and Chowan unites the rivers of Virginia and North Carolina. The Roanoke, formed by two branches, the Dan and Stanton rivers, is the first stream from Cape Florida which derives any part of its waters from beyond the Blue Ridge. Dan river rises in Surry and Stokes counties, North Carolina, and in Patrick, Henry, and Franklin counties, Virginia, and pursuing a general course nearly east 120 miles, receives the Stanton from the northwest. The latter, rising in Botte-tourt and Montgomery counties, Virginia, in the Great valley west from the Blue Ridge, interlocking sources with James' river and Great Kenhawa, turn east, and piercing the mountain chain inflect to the S. E. and S. E. by E., and after a comparative course of 120 miles joins the Dan and forms the Roanoke.

The sources of the Roanoke spread from N. lat. 36° 10′, to N. lat. 37° 25′, and flowing from the most elevated table land in the United States, give to the basin an immense comparative range of climate. The most north-western branches rise in the spurs of the Peaks of Otter, in the Blue Ridge and Tinker mountains, at an elevation of at least 1500 feet.* This difference of level produces a change of temperature equal to four degrees of latitude, though the mean range of the basin declines but little from an east and west direction. All the higher branches of the Roanoke are upon the primitive; and similar to the Alatamaha and Santee, the Roanoke receives no large tributaries below the point of union of its main constituent branches, at N. lat. 36° 40′ and

* See tables 2 and 3.

long. 1° 40′ W. from W. C. Here the main stream inclining to S. E. by E. about 40 miles, quits Virginia in the S. W. angle of Brunswick county, and entering North Carolina in the N. E. angle of Warren county, quits the primitive and enters on the region of alluvion, at the rapids between Halifax and Northampton counties. Thus far the ocean tides penetrate the basin. Below tide water the particular courses of the Roanoke are excessively circuitous, and in a comparative distance of sixty miles it is probable the actual channel amounts to near 100. The entire comparative course below the junction of Dan and Stanton is about 140 miles, and the whole length by either branch 250 miles. If to this we add 60 for Albemarle sound, the Roanoke has a course of 310 miles.

The Chowan, formed by the Meherin and Nottaway rivers, is, when compared with its rival the Roanoke, an humble stream, but the former derives great importance from the position and range of its valley. The Meherin branch rises in Charlotte county, Virginia, at long. 1° 30′ W. from W. C., N. lat. 37°; and flowing thence S. E. by E. 80 miles, enters North Carolina between Gates and Northampton counties, and continuing its course 20 miles, joins the Nottaway between Gates and Hertford counties above Wynnton.

The remote north-western sources of the Nottaway are in Prince Edward county, a little northward from those of the Meherin. Inclining but little from an eastern course, the Nottaway flows about 70 miles into the centre of Sussex; bending thence to S. E. 40 miles, receives from the north, on the line between Virginia and North Carolina, the Blackwater. The latter rising in Prince George's county, in the vicinity of Petersburg, flows 40 miles to the S. E., and turning thence 25 miles, inclining something W. of S., unites with the Nottaway as already stated. Below their junction the course of

the Blackwater is preserved, and 10 miles within North Carolina the combined waters mix with those of the Meherin, and form the Chowan, almost exactly on the meridian of Washington.

A fine tide water volume, the Chowan, pursues a course of south-east 20 miles, whence it opens into a wide bay, and bending to nearly south 20 miles, terminates in Albemarle sound.

As a commercial basin the Roanoke by neither branch offers facilities in comparison to volume of water or surface drained. Sloops ascend both branches about 70 miles, above which boats are used. As in most other streams of the Atlantic slope, which flow from the Appalachian chain, the most unnavigable part of the Roanoke is immediately above the primitive ledge. The rapid and gigantic strides of internal improvement will, however, soon remove obstacles to the passage of vessels on our streams, which a few years past, and even now, appear irremovable.

In respect to climate, the Roanoke basin demands great attention in a view of the United States. Extending from east to west, between N. lat. 35° 30′ and 37° 30′, it constitutes the mean between the extremes of the United States, lat. 25° and 52°, since, though restricted by mere lines of latitude to 37½°, that part of the basin lying upon the Appalachian table land, virtually carries the temperature to N. lat. 41°.

Rising like an immense central base, that section of the United States comprised in the western part of North Carolina, eastern part of Tennessee, and south-western part of Virginia, discharges the various river sources like radii from a common centre. A single glance on a general map of the United States will suffice to shew the full force of this observation.

CHAPTER IV.

GEOGRAPHICAL VIEW OF THE MIDDLE SECTION OF THE ATLANTIC SLOPE.

We have now passed the tropical zone of the Atlantic slope, and have left the region of the sugar cane, orange, fig, and even in great part cotton, and have reached the climate of wheat, the apple, and luxuriant meadow grasses.

The first basin of this temperate tract is that of Chesapeake. By the caprice and accident of geographical nomenclature, the Susquehanna loses its name at the head of its tides, or at the point where it passes from the primitive to the sea alluvion. The Chesapeake must therefore give name to this the most extensive of the Atlantic basins of the United States; and under this general head, we have before us a navigable expanse, in form of an immense triangle, the base of which, from the mouth of Chesapeake bay to the sources of Susquehanna river, amounts to 400 miles; side along the valley of James' river 250 miles; area, including every inflection, at least 65,000 square miles. Extending from N. lat. 36° 40′ to N. lat. 42° 55′, and from 1° 45′ E. to 3° 30′ W. long. W. C.

I have already expressed an opinion that in strictness of geographical language, Chesapeake bay differed from the other sounds upon the Atlantic slope, only as having one outlet, in place of two or more. It differs, however, in another greatly more important circumstance, that is in depth of water. We have seen the shallowness of the rivers and sounds to the south-west of Chesapeake. This feature is at once reversed in this great recipient, which, al-

most to the head of its tides, sinks to a depth below the largest draught of vessels.

The Chesapeake stretches in a direction nearly due north, from lat. 37° N. to 39° 33′ N. or nearly 180 miles. The breadth is very irregular. Below the Potomac, or for about 70 miles, the width averages 25 miles; but from the influx of the Potomac to that of the Susquehanna the mean width does not exceed 10 miles. These elements would yield an area below the Potomac of 1750, and above the mouth of that river 1100; in all, 2850 square miles. If to this we add 750 square miles for the minor bays or channels below tide water of James river, York, Rappahannock, Potomac, and others of a similar nature but of less magnitude, we shall have an aggregate superficies of 3600 square miles for Chesapeake bay and its immense branches.

In the review of this important section of the Atlantic slope we shall advance by its constituent vallies, of which that of James river follows that of the Roanoke. Entering Chesapeake from the Atlantic ocean about 20 miles, an opening appears on the left, which is found to be the capacious mouth of James' river. This great confluent derives its remote sources from the central vallies of the Apalachian system. If a line was drawn from the extreme western fountains of the Roanoke, and extended also along those of James river, it would intersect that part of the mountain system at an angle of forty-five degrees nearly; and here we perceive at once the peculiar inflections of the river vallies of the basins of Susquehanna and Delaware. In the higher branches of James river those inflections either pursue the course of the mountain vallies, or cross them and the mountain chains at right angles. This structure prevails from the sources of Roanoke to those of the Delaware, with a regularity which evinces a general cause.

Thus influenced in their courses, the two north-

western branches of James river, rising in Pendleton and Bath counties, Virginia, flow down the mountain valleys S. S. W., meet other streams flowing in a directly opposite course, gradually unite, turn to N. E. by E., enter into and receive the waters of Rockbridge county at the northwest base of the Blue Ridge. Turning again at right angles, and piercing the opposing mountain chain, leaves the great elevated table land of central Virginia.

Interlocking sources with the Kenhawa, the Monongahela, and Potomac, this mountain section of James river is, by actual survey, elevated at a mean of about 1500 feet above the Atlantic level; between 37° 20′ and 38° 20′ N. with a barometrical height equivalent to four degrees, the climate is virtually that of N. lat. 42° on the Atlantic ocean.

Below Blue Ridge, James river flows S. E. 20 miles, to Lynchburgh; turns thence N. E. 40, and again abruptly inflects to S. E. by E. With many partial bends, the latter general course is maintained 140, to its influx into Chesapeake bay, between Willoughbay Point and Old Point Comfort, at N. lat. 37°, lon. W. C. 0° 45′ E.

The Appomattox, entering from the right, 23′ W. from the meridian of Washington, is the only large tributary stream which contributes to augment James river on that side below the Blue Ridge. The Appomattox rises in Prince Edward and Buckingham counties, flows by a general course nearly east, falls over the primitive ledge at Petersburgh, and joins the main stream 35 miles below Richmond.

Rivanna from Albemarle and Fluvanna counties, and Chickahomina entering almost on the meridian of Washington, are the only streams worthy notice which flow into James river from the left.

Following the general line of each particular course, this fine river has a comparative channel of 270 miles below the Blue Ridge, and 50 miles in the

Great Valley below the influx of Cow Pasture river; having an entire navigable channel of 320 miles, something above one hundred below, and the residue above tide water. The tide reaches to Richmond in James river, and to Petersburg in the Appomattox. Ships of the line can enter Hampton Roads, and those carrying 40 guns can be navigated to Jamestown, 25 miles higher. Merchant ships of 250 tons ascend to Warwick, and those of 130, to Rocketts, or the port of Richmond. The canal round the falls at Richmond unites ship to boat navigation, the latter extending upwards of two hundred miles. Petersburg is little if any less accessible than Richmond to sea vessels.

Since the very dawn of internal improvement in the United States, and particularly since the rapid augmentation of population in the Ohio valley, the channel of James river has attracted public attention, as offering a route in connexion with the Great Kenhawa to reach the Ohio river. One of the most obvious benefits of such a view as this, is to trace and place before the reader clear views of the irregularities in the face of the United States, and to enable the statesman and statist to adequately compare proposed routes of canal or road improvement.

Independent of elevation, the higher branches of James river, and those of Great Kenhawa, below the bend of the latter in Montgomery county, Virginia, are so relatively placed as to greatly facilitate canal operations. The tables will shew, however, the respective heights which are to be overcome by lock architecture, from which inductions may be drawn, and fair comparisons made between canal and road improvement.

Whoever examines the courses of James river on a good map, and compares them with the geological observations I have made on their peculiar compliance with the mountain chains, will find that the general range of the channel is interrupted by

this mountain influence as low as the mouth of Rivanna, and even to the falls and head of tide water at Richmond. An humble, but a very distinct, and on the rivers a very influential chain of mountains, traverses North Carolina, Virginia, Pennsylvania, and New-Jersey. This chain rises in Rutherford county, North Carolina, extends through Burke, thence separates Wilkes from Iredell, and reaches in broken links through Surry and Stokes; enters Virginia in Henry, about lon. 3° W. from W. C. In North Carolina this chain takes several local names. In Rutherford, Flint hill is its first distinct mass; it is known as Montague hills in Burke; as the Iron mountain between Wilkes and Iredell; and as the Pilot mountain in Surry; and as Sawraton mountain in Stokes. It again, as Turkey Cock mountain, separates Henry from Franklin counties, Virginia; appears in Buckingham and Nelson counties, and assumes distinctness as a chain known as South-west mountain, in Albemarle. Thence it may be traced into Maryland, over Orange, Culpepper, Fauquier, and past Leesburg, in Loudon, crossing the Potomac below the Monocacy. Rising into a noted peak, the Sugar Loaf, in the western angle of Montgomery county, Maryland, thence it separates Montgomery from Frederick, and Frederick from Baltimore, merging into Pennsylvania in York county, nearly on the meridian of Washington. Traversing the south-eastern parts of York and Lancaster counties, separates Chester and Montgomery from Berks, and Lehigh and Northampton from Bucks, crosses Delaware river below Musconecunk river, ranges over Hunterdon, Morris, and Bergen counties, New Jersey, and is known as the Haverstraw mountains in New-York.

In all this distance of six hundred miles, any person well acquainted with the physical geography of the United States, would detect a chain of mountains from a correct map of the intermediate rivers.

The mountain agency is completely apparent in the higher branches of the Santee, Pedee, and Roanoke; in the courses of James river above and below Lynchburg, and in the sources of Rivanna, Rapid Ann, and Rappahannoc rivers. It is again very visible in the courses of Potomac above and below the Monocacy. Similar effects are easily traced in the Susquehanna, Schuylkill, Delaware, Raritan, and Passaic rivers.

The remote sources are drawn from the verge of the western floetz formation, from which they are only separated by the Allegheny or main chain of the Appalachian system. Proceeding thence over the central secondary, and primitive, reach and pass over the sea sand alluvion.

The minor valley of York river follows that of James river. The Pamunkey and North Anna, both rise in the south-west mountain, 1° 20′ W. from W. C., N. lat. 38° 10′, in Orange, Albemarle, and Louisa counties, and after a course of sixty miles each, they unite between Hanover and Caroline to form the Pamunkey river. The latter, after a very tortuous course of perhaps seventy, but comparatively only forty miles, receives a smaller stream, the Mattapony, from the north-west. At their junction, the united stream opens into a bay or river, thence in a distance of forty miles known as York river, to its influx into Chesapeake bay.

The remarkable valley of the Rappahannoc intervenes between that of York and Potomac. The Rappahannoc rises in the Blue Ridge, and in the northern part of Culpepper and western part of Fauquier counties, one degree west from Washington, and at lat. 38° 52′ N. Assuming a course 40 miles to the south-east, receives from the west a much more considerable stream, the Rapid Ann. The latter rises also in the Blue Ridge, and in the counties of Madison and Orange. The united volume retains the name of Rappahannoc, and twelve

miles below their junction falls over the primitive ledge, and meets the tides between Fredericksburg and Falmouth. The Rappahannoc, below its main fork above Fredericksburg, in a course of S. E. by E. 130 miles, does not receive even a large rivulet. Below the falls, similar to other rivers of the Chesapeake basin, this river imperceptibly widens into a bay, up which vessels of 140 tons can ascend to Fredericksburg.

The progress of our survey now brings us into the very important valley of the Potomac. If we turn our eye to a map of Virginia, Maryland, and Pennsylvania, we find, interlocking sources with James river, Great Kenhawa, Monongahela, and Susquehannah, a series of rivers, north-west from the Blue Ridge, and flowing along the mountain valleys; those of Virginia and Maryland having their courses to the north-east, and those of Pennsylvania to the south-west, whilst a middle stream is perceived rising west of all the chains but two of the Appalachian system, and forcing its devious way across the system towards the Atlantic ocean. This series of rivers unite to form the Potomac, the extreme western sources of which rise 2° 45′ W. from W. C. The south and main branch of Potomac rises in and drains Pendleton county, in Virginia, heading with, but flowing in a directly opposite course to Greenbriar branch of Great Kenhawa, and Jackson's and Cow Pasture branches of James river. The south branch rises as far south as N. lat. 38° 25′, completely overheading the sources of the Monongahela. Flowing N. E. about 100 miles, between the Allegheny and Kittatinny chains, meets from the west an inferior stream, but to which the general name of Potomac is applied.

The Potomac rises in a ridge locally called the Backbone mountain, at N. lat. 39° 12′, and flowing thence N. E. 30 miles, receives a small but important branch, Savage river, from the N. E.; then

turns at right angles to the S E., and piercing two chains of mountains in about 10 miles, inflects again to the N. E. 20 miles to Cumberland. Here once more the Potomac is inflected to the south-east, by the opposing mountain masses, across which its volume is precipitated, and 20 miles below Cumberland meets the south branch, and a short distance below once more turns to north-east to Hancock's town. At this point the Potomac has reached its most northern bend, N. lat. 39° 40′, and within little more than two miles from the southern boundary of Pennsylvania. Turning to south-east below Hancock's town, it passes the Kittatinny chain, and with many partial windings, but a general course of 40 miles, receives the Shenandoah from the south-west, and breaks through the Blue Ridge at Harper's Ferry.

The Shenandoah is the southernmost branch of Potomac, rising in the south-west angle of Augusta county, at N. lat. 38° 55′. Draining the whole of Augusta, Rockingham, and Shenandoah, and part of Frederick and Jefferson counties, the Shenandoah is truly a river of the great Appalachian valley between the two chains of Blue Ridge and Kittatinny. The main stream follows the range of the former chain, at a distance of from two to five miles, receiving its tributary branches from the west or left.

The Shenandoah valley is 130 miles in length, with a mean width of 20; area, 2600 square miles, with a considerable difference of elevation. By reference to table 4th, page 70, it will be seen that the surface of the water at Harper's Ferry is 182 feet above tide water at Georgetown, whilst by comparison with the first element in tables 2 and 3, it will be evident that the sources of Shenandoah must exceed one thousand feet.

That spot where the Potomac and Shenandoah intermingle, has gained a celebrity which must endure as long as sublime scenery and the name of

Thomas Jefferson continue to excite admiration. Harper's Ferry is at N. lat. 39° 18′, lon. W. C. 0° 38′ W. That part of the valley of Potomac above the Blue Ridge extends in latitude from 38° to the sources of the Conococheague, 40°, or through two degrees of latitude, in the direction nearly of S. W. and N. E. It lies in form of a nearly regular parallelogram, 150 by 50; area, 7500 square miles.

Leaving the attractive mountain pass at Harper's Ferry, the general course to south-east is continued to the mouth of Monocacy 10 or 12 miles, where it passes the last distinct chain of mountains, and inflecting a few miles to the south, resumes a south-east course, which is maintained to the head of tide water at Georgetown, fifty miles below the mountain pass at Harper's Ferry. Below tide water the Potomac imperceptibly loses the features of a river in that of a bay, winds between Georgetown and the Navy Yard at Washington to a southern course, and below Alexandria inclines to the west of south 40 miles; sweeps round to N. E. 15 miles, and finally regaining a S. E. direction about 50 miles, opens into Chesapeake bay, at N. lat. 38°, having returned to the latitude of its most southern source, the Shenandoah.

In its natural state the Potomac is the most navigable branch of Chesapeake; ships of any burthen of war or of commerce, can be navigated to Alexandria, and vessels of very heavy burthen to Washington navy-yard. This is the most distant point from the ocean that ships of the line can be navigated in the United States. It is upwards of one hundred miles from the Atlantic ocean, at the mouth of the Delaware, the nearest point of that ocean; and from the entrance of the Chesapeake, near two hundred miles.

The attention of the philosopher and statesman will be secured to the central position of the Potomac valley; its reaching almost over the Appala-

chian system of mountains, and with these natural, the political advantage of containing the capital of the nation. It is the business of the author of this view to collect and record data, and leave their application to those more directly concerned. The general elevations and the connexion of the Potomac valley with that of Ohio, are given in table 4., page 70; and it may be observed here, that seven or eight feet are about the mean term of canal locks already made in either Europe or America; and that the canal uniting the head waters of the Volga with Lake Ladoga, by the small rivers Emsta and Twere, elevation 568 feet, is the highest canal navigation yet actually executed; and there "*The rivers Emsta and Twere, near the summit level, have not sufficient water for a constant supply; and it is necessary to pound up the waters and lakes, for a flash, or artificial flood. This is accomplished by pen sluices, and some short cuts.*"

The next stream entering the western shore of Chesapeake bay after the Potomac, is the Patuxent. Obeying in a very striking manner the great inflections of the Potomac, the Patuxent rises in the south-east mountain, on the south-east border of Frederick, and near the connecting angle of Montgomery, Baltimore, and Frederick counties, at N. lat. 39° 20′, long. W. C. 0° 08′ W. Thence flowing south-east 35 miles, reaches to within five from the tide water of Chesapeake bay; inflecting thence nearly south 30 miles, at a distance of from eight to ten miles from the Chesapeake, it again gradually bends to south-east 25 miles, opens into a bay from two to three miles wide, until merged in the general recipient, between Calvert and St. Mary's counties.

Next above the Patuxent, spreads a small valley to which Baltimore has given incalculable importance. The Patapsco rises in the south-east mountain along the borders of Baltimore and Frederick counties, and flowing S. E. by E. 30 miles, unite and

fall over the primitive ledge, opening into the Chesapeake by a bay of ten or twelve miles in length. At the head of Patapsco bay, on a small haven at the mouth of Falls creek on the primitive ledge, stands the city of Baltimore, N. lat. 39° 18′, long. 0° 27′ E. from Washington City. Vessels of 600 tons are navigated to Fell's Point, the lower harbour of Baltimore.

The small valleys of Patapsco, Gunpowder, and Bush river, fill the space between the upper Patuxent, and the creeks of the lower Susquehanna.

The eastern or left shore of Chesapeake bay, for about 50 miles, composing the Virginia point, is but little broken by bays; but with lat. 38° 03′, nearly on the Maryland line, opens Pocomoke bay and river, leading to Snow Hill, in Worcester county; thence, turning Watkin's point, the small bay of Manokin leads to Princess Ann, and the Wicomico to White Haven. Nanticoke river rises in Sussex county, of Delaware, and flowing south-west, enters Maryland, separating Somerset and Dorchester counties, forming with Wicomico, Fishing bay. With an intervening peninsula, forming Dorchester county, we next enter the bay and river Choptank. This is the most considerable stream of the eastern shore of Maryland, rises in Kent and Sussex counties, Delaware, and flowing S. S. W., enters Maryland, and after a course of 50 miles turns to N. W. and dilates into a bay of about 15 miles, on one of the arms of which, Tread Haven, stands Easton, in Talbot county, the most important mart of eastern Maryland. Next follows the small bay of St. Michael's; and on N. lat. 39°, the mouth of Chester bay, formed by a small river rising in Delaware, and flowing thence south-west, 35 miles, between Kent and Queen Ann counties, opens by a wide bay into Chesapeake; Sassafras, separating Kent and Cecil, and finally, Elk river flowing out of Pennsylvania and Delaware, into Cecil county, Maryland.


PENNSYLVANIA
and
NEW JERSEY
Miles.
5 10 20 30 40 50 60 70
Long. West 0 Long. E. from Washington
LAKE ERIE
NEW YORK
PENNSYLVANIA
MARYLAND
VIRGINIA
OHIO
DELAWARE
NEW JERSEY
Erie
Warren
Meadville
Franklin
Mercer
Butler
Kittanning
Pittsburg
Washington
Brownsville
Somerset
Bedford
Huntingdon
Bellefonte
Lewistown
Williamsport
Coudersport
Wellsboro
Towanda
Montrose
Wilkesbarre
Berwick
Sunbury
Northumberland
Harrisburg
Carlisle
Chambersburg
Gettysburg
York
Lancaster
Lebanon
Reading
Easton
Bethlehem
Allen T.
Norristown
Philadelphia
W. Chester
Wilmington
Havre de Grace
Baltimore
Hagers T.
Frederick T.
Cumberland
Harper's Ferry
Winchester
Leesburg
Washington
Alexandria
Annapolis
Dover
Easton
Chester T.
Milford
Lewis T.
Cape Henlopen
Cape May
Trenton
Princeton
New Brunswick
Newark
Elizabeth T.
Morristown
Burlington
Mount Holly
Camden
Woodbury
Salem
Bridgetown
Ithaca
Bath
Binghamton
Owego
Cherry Valley
Schenectady
Troy
Albany
Hudson
Catskill
Kingston
Poughkeepsie
Newburg
Goshen
Milford
Morgantown
Wheeling
Steubenville
Dumfries

much to remove before their streams can flow with tranquil or equal motion.

This feature in the geography of the United States is highly favourable to canal operations, in forming a union between the Atlantic and central waters. The rivers have, during accumulated centuries, done that which man could not have dared to conceive. The rivers have torn the mountains to their bases, and given to human beings, and the fruits of their toil, a free passage. Man in his feebleness is relieved from labours beyond his aggregate force, and left to remove mere obstructions. When this subject is viewed with the eye of philosophy, it is one of those sources of reflection which gives exercise to every noble faculty of the mind.

Below Tioga Point, the already large volume of the Susquehanna flows a little east of south 15 miles to the north-western foot of the Appalachian system, which it encounters at Towanda creek, near Meansville, in Bradford county, Pennsylvania, and thence, turning to south-east, pierces the first chain, and flowing 30 miles, reaches the Tunkhannock creek and chain, having now passed over the secondary and entered on the transition formation. Breaking the Tunkhannock, and some other chains, the Susquehanna finally, at the mouth of the Lackawannock, 9 miles above the town of Wilkesbarre, enters the Wyoming valley, and winds to the southwest. Continuing the latter course down the mountain valleys about 70 miles, to the influx of the western branch, between the villages of Northumberland and Sunbury.

In all its course of 120 miles, from Tioga Point to Sunbury, the Susquehanna receives no tributary stream of fifty miles comparative course. Wyalusing, Tunkhannock, Lackawannock, and Nescopec from the left, and Towanda, Mahoopeny, Bowman's, and Fishing creeks from the right, are merely bold and fine, but only small mountain torrents.

The Western Branch is, in all its extent, exclusively a river of Pennsylvania. Rising far within the central secondary, its extreme western sources in Indiana and Cambria counties, are within 35 miles from the Alleghany river at Kittanning, and about 60 miles from the junction of the Alleghany and Ohio at Pittsburg. Draining sections of Cambria, Indiana, and Clearfield counties by a general course of N. E. 70 miles, the West Branch receives the Sinnamahoning from the north-west, and at the northern angle of Centre county. Below the entrance of Sinnamahoning, the West Branch continues north-east ten miles, thence turning 20 miles to the south-east, receives Bald Eagle river from the south-west. Thus far of its course the West Branch drains the central secondary, but immediately above the influx of the Bald Eagle, it breaks through the Alleghany or main chain of the Appalachian system, and entering on the transition, turns to a little north of east. Receiving the two large creeks Pine and Loyalsack from the northward, and passing Williamsport, this now noble stream continues its course of nearly east, forty miles from Bald Eagle creek to Pennsboro'. In the vicinity of the latter village, the stream turns to nearly south, twenty-five miles to its junction with the north-east branch, at Sunbury, and thirty-five from thence to the influx of the Juniata from the west.

Juniata, the southwest branch of the Susquehanna, rises in and drains the northern part of Bedford county; flowing from the south-eastern side of the Alleghany chain, and thence about 20 miles nearly east, passes Bedford, and rushing through several minor chains, turns abruptly to a course a little east of north 40 miles, receives the Frankstown branch near the borough of Huntingdon. The general course of Frankstown branch is from north-west to south-east, and below their junction the united stream continues that course 15 miles, to its passage

through Jack's mountain, between Huntingdon and Mifflin counties. Again inflected to north-east, the Juniata enters Mifflin county, and pursuing that direction nearly thirty miles, passes Lewistown, and again winding to south-east, breaks through Shade mountain into Tuscarora valley; and thence, crossing that valley, in a course of 10 miles reaches the north-west base of Tuscarora mountain, where it once more bends to the north-east, and following the base of the mountain 10 miles, turns to south-east, and forming a passage through, leaves Mifflin and enters Perry county, over which it continues 15 miles to its junction with the Susquehanna, nearly on the meridian of W. C. and N. lat. 40° 23′.

Like every other branch of the Susquehanna, the Juniata is as noted for the number of its rapids as for its exemption from perpendicular falls. Though originating in, and having its whole course amongst craggy mountains, it is navigable, at high water, to near Bedford. In speculative opinion on the means, and most suitable route, to form a water communication between either the Delaware or Chesapeake basins, and the valley of Ohio, the Juniata has been conspicuously held in view. How far this route is comparatively eligible, is a problem now advancing towards complete solution, by a canal.

The Juniata is the last tributary of importance which enters the Susquehanna. The Conedogwinet, Yellow-Breeches, Conewago, Codorus, and Deer creek, from the right, and below Sunbury on the left, the Mahanoy, Mahantango, Swatara, Conestoga, and Octoraro, are comparatively creeks, none of them having a general course of 50 miles. The Swatara is important, however, as its valley forms part of the route of the Union Canal.

We have already seen that from Pennsboro' to the influx of the Juniata, the Susquehanna pursues a course of very nearly due south 60 miles. Though not appearing so on our maps, from the deficiency

of their representation of the chains, the southern course of the Susquehanna, below Pennsboro' to the mouth of the Juniata, is actually the most mountainous part of its course by either branch. Independent of minor ridges, in this distance of 60 miles, this remarkable river traverses six or seven of the principal chains, and even at the last curve to the south-east, below the Juniata, it has not yet passed the Appalachian system, but again in a course of 80 miles, it carries its now immense volume, through the Kittatinny 5 miles above, and through the Blue Ridge, 8 miles below Harrisburg; and lastly, the south-east mountain, below the Conestoga. From the Blue Ridge the channel becomes more and more interrupted with shoals and rapids, until the stream pours over the last rocky ledge, and loses its name and rank as a river in the Chesapeake bay.

The valley of the Susquehanna, from its position naturally and politically, and from its peculiar features, must at all future times attract a full share of attention from the traveller and statesman. I have often observed that rivers were the most diversified objects in nature, and defied generalization most effectually. To be adequately understood, they must be studied individually. The three rivers, Susquehanna, Delaware, and Hudson, are contiguous to each other, and the former has interlocking sources with the two latter, and all pierce the entire Appalachian system; and yet, in those intrinsic features which give character, no three rivers can be more strikingly distinct. It is true, that in their respective courses, the Susquehanna and Delaware present an accordance, which must have arisen from some general and inherent structure of the country they drain; but here the resemblance ceases. Including all its higher, and in particular its north-east branches, the Susquehanna is peculiar in the physiognomy of its vallies. Very wide bottoms of two, and often three stages, spread along the con-

vex side of the bends; whilst along the concave rise steep, frequently precipitous, and sometimes mountainous banks. Here are at once, and over a large space, combined in never ending variety, the most bold and the most soft and tranquil scenery; the fine glassy surface of the rivers, bordered on one side by wide spreading vales, rising by acclivity after acclivity, and on the other by high swelling or abruptly rocky walls.

Exuberant fertility is here followed on an almost perceptible line, by the sterile though wood-clothed mountain. The varied hue of the foliage again gives a truly rich drapery to the landscape. The natural timber of the bottoms, differ materially from that of the mountains. On the former, sugar-maple, black walnut, elm, beech, and other trees indicative of a productive soil abound. Rising to the higher stage, the deep green of the pine is seen intermingled with the softer and lighter tints of the timber of the vales. On the slopes and even summits of the mountains, we meet the pine, oak, and chesnut, and above the Lackawannock, the hemlock.

As a navigable stream, the Susquehanna is much less interrupted by rapids, or dangerous shoals, than might be expected from the tortuous course it pursues through an extensive mountain system. It is also a feature strongly marked, though common to the other rivers of the Atlantic slope, that where the volume of water passes the particular chains, rapids seldom, and perpendicular falls no where occur.

On so large a space as that of the Susquehanna valley, mere difference of latitude would superinduce a sensible difference of climate; but here respective elevation enters as a very powerful element, in changes of temperature. The mouth of the Susquehanna, at Havre de Grace, is at N. lat. 39° 33′, one degree east from Washington City. The extreme northern sources, are, as I have already

noticed, at N. lat. 42° 55′, between one and two degrees east of Washington. This gives a difference of three degrees and twenty minutes of latitude; but by recurrence to table 5th it will be perceived, that the summit level between the Chemung at Newtown and Seneca lake, is 885 feet above the level of the Atlantic tides, and the pass between Newtown and Seneca being a mountain valley, falls far short of the mean elevation of that part of New York comprised in the counties of Tioga, Cortland, Chenango, and Otsego. The latter region is safely estimated at a height of 1000 feet, or equivalent to at least 2½ degrees of latitude. Thus we find, that in effect, the climate of the basin of Susquehanna differs upwards of five degrees in temperature. Again, if we examine the relative position of the mountain valleys of Pennsylvania, drained by the West-Branch, and the Juniata, and compare the elements in tables 4 and 5; we are warranted in stating the mean height of that region at 1200 feet, or equivalent to three degrees of latitude. Therefore, all the higher sources of the Susquehanna, flow virtually from N. lat. 44° or 45°, if reduced to the ocean level.

Though much less extensive than the preceding, the basin of the Delaware is a very important link in the chain of rivers along the Atlantic slope. The Delaware rises by two branches in the western spurs of the Catsbergs. The Coquago to the north-west, and the Popachton to the south-east, flow from their sources, south-west 50 miles, draining the central and south-eastern part of Delaware county, New York. Reaching within 5 miles from the north-east angle of Pennsylvania, and within 10 from the Susquehanna river, the Coquago turns to south-east, and continuing that course 15 or 16 miles, receives the Popachton. With rather serpentine individual windings, the Delaware maintains a south-east direction 60 miles from the north-east angle of Pennsylvania

to the mouth of the Nevisink river from Orange county, New-York. Encountering the Kittatinny chain of mountains, the Delaware then turns to south-west, almost washing the mountain base, 35 miles, to the mouth of Broadhead's creek, from Pike and Northampton counties. Curving to the south, the Delaware now passes the Kittatinny by what is usually called the Delaware water gap, and enters the fine mountain valley between the Kittatinny and Blue Ridge chains. Continuing south, it receives the first large confluent, the Lehigh, at the foot of the latter ridge, and opposite Easton; then pierces that chain, and again 5 miles below, breaks through the south-east mountain, and winds to the south-east, having flowed in a southern direction 30 miles. Pursuing a south-eastern course of 35 miles below the south-east mountain, falls over the primitive ledge at Trenton, there meets the Atlantic tide, and at Bordentown, five miles still lower, once again bends to south-west. Passing along or near the outer verge of the primitive, this now widening stream continues 40 miles, passes Philadelphia; 5 miles below that city, receives the Schuylkill, from the north-west; and thence passing Chester, Wilmington, and Newcastle, opens into a bay 5 miles below the latter village. The Delaware bay again turns and opens to the Atlantic ocean to the south-east.

The length of the Delaware from the Catsbergs to tide water at Trenton is 185 miles, and 120 from the rapids at Trenton to the Atlantic ocean, having an entire comparative course of 305 miles. Though rolling over numerous rapids, no cataracts, in the true sense of that term, interrupt the navigation of this river, which, at seasons of high water, extends by both branches into New York. The general course is very nearly from north to south, along a meridian two degrees east from W. C.

Similar to the Susquehanna and the Potomac, the

Delaware receives its only two large confluents from the right. These are the Lehigh and Schuylkill.

From the position of their valleys as channels of inter-communication, and from the mineral treasures found along their mountain sources, the Schuylkill and the Lehigh have become of great importance. The Lehigh rises by various mountain branches in Northampton, Pike, Wayne, and Luzerne counties, uniting below Stoddartsville, and forming a small and precipitous river current, which pouring first to the south-west, gradually turns south, and thence south-east, passes Mauch Chunk village, and struggling between mountain masses, finally escapes through the Kittatinny range, and continuing to the south-east, meets the north-west base of the Blue Ridge at Allentown, in Lehigh county. Here it turns to the north-east, along the foot of the latter chain, and passing Bethlehem joins the Delaware at Easton. The Lehigh is truly a mountain torrent. There is perhaps no other stream of the United States, except Schoharie in New York, of equal length, which presents so great difference of level between the points of source and discharge.

In comparative course, it is about 25 miles from Stoddartsville to Mauch Chunk, and the intermediate fall amounts to 845 feet. Ten miles below Mauch Chunk, in a direct line, this stream passes the Kittatinny, and in the intermediate space falls 245 feet. From the Lehigh water gap, or passage through the Kittatinny, to its junction with the Delaware, it falls 205 feet in a comparative course of 35 miles. The entire fall from Stoddartsville to Easton being 1210 feet: comparative course 70 miles, or upwards of 17 feet to the mile. The distance from the town of Stoddartsville to the extreme source is from 15 to 20 miles, with a fall it is probable of 500 feet, giving to this small river a course of 100 miles, and fall of 1700 feet; and what may be con-

sidered in a peculiar manner remarkable, no actual cataract worthy notice exists in all its course.

Above the water gap, the bed of the Lehigh lies at the base of steeply rising and often precipitous mountains, leaving between them seldom more space than the mere width of the stream. The scenery is in a high degree wild, grand, picturesque, and frequently sublime. Below the Kittatinny, the features of nature are less magnificent, but still follow in a romantic succession of strongly contrasted and elegant landscape. This varied and pleasing character of its shores gives a delightful diversity to the vicinity of Allentown, Bethlehem, and Easton. The banks of this beautiful river most highly reward the enlightened traveller; one scene alone upon it would repay a journey of many hundred miles; that scene is Mauch Chunk, with its inexhaustible mines of coal, and the stupendous works erected and erecting to procure this valuable mineral.

The Lehigh is now rendered navigable by dams and falling locks for some distance above Mauch Chunk. This very useful and arduous work has been effected by the Lehigh Coal and Navigation Company, under the direction of White and Hazzard, the superintending engineers. The discovery of immense masses of anthracite coal, made in its vicinity, led to the improvement of the river, and the roads leading from it to the mines.

Similar mineral wealth in interminable strata of anthracite coal, led to the improvement and importance of the Schuylkill. The latter rises in and drains about the five-eighths of Schuylkill county. Formed by two branches interlocking sources with the Lehigh, Nescopec, Cattawissa, Mahanoy, Mahantango, and Swatara, the Schuylkill bursts through the Kittatinny chain, between Berks and Schuylkill counties, after a course of 35 miles from the west. Below its passage through the Kittatinny, it turns to nearly south 20 miles, in which distance it has received

Maiden creek from the north, and Tulpehocken from the west, and passes Reading, immediately below which town it pierces Blue Ridge, and assumes a south-eastern course. In the latter direction this river continues to the environs of Philadelphia 50 miles, winding to nearly south at the mouth of the Wissahiccon, and, passing through the western part of Philadelphia, is lost in the superior volume of the Delaware 5 miles below that city.

The entire comparative length of the valley of the Schuylkill is about 100 miles, 20 above and 80 below the Kittatinny chain.

A strong resemblance is perceivable between the Schuylkill and Lehigh, though the scenery along the former is less rugged and rich than upon the latter stream. Flowing from the same mountain valley, the soil and mineral productions are in a great measure similar on the two streams: but *in situ*, the respective masses of anthracite are very differently distributed, in the Mauch Chunk mountain, and any other mine of that fossil which I have visited or been made acquainted with in either the Delaware or Susquehanna basins. That of Mauch Chunk lies in immense irregular strata, open in one place to the day on the summit of the mountain, and with little if any regular inclination; on the contrary, the mines on the Schuylkill and the valley of Wyoming, near Wilkesbarre, dip like the other incumbent and decumbent strata.

The Schuylkill is now navigable by canals and locks to a few miles above Mount Carbon, near its source, ten miles above Orwicsburg; and the Union Canal Company have completed a channel of water communication by the Tulpehocken and Swatara, into the Susquehanna at Middletown. A canal is again in progress from the Delaware, opposite Easton, through New Jersey, which when opened will serve as an aquatic line of transmission between the Delaware and Hudson basins.

Of that part of the Delaware basin comprised in New Jersey little need be said, no large tributary stream entering from that section, composed of a strip 200 miles by a mean width of about 15, or 3000 square miles. Small as it is, however, in a general view, that part of the Delaware basin occupies about one-half the State of New Jersey.

Similar to the Susquehanna, the Delaware rises on the western or central secondary, and traverses over all the intermediate formations in its passage to its recipient. The minerals yet discovered in any great abundance in the two basins are, iron and anthracite coal.

Observations made on the climate of the Susquehanna basin may be correctly applied to that of Delaware. The difference of latitude between the mouth of Delaware bay and the sources of Coquago river is 3° 45′, and the difference of elevation at least 1500 feet. Combining these elements, the real difference of temperature will be nearly, if not altogether, seven degrees.

It is a remark that may be made universal, that such rivers as the Susquehanna, Delaware, Hudson, and Connecticut, must have very mitigated spring floods, as the temperature must be at all times higher at the mouth than at the source; and consequently, the ice and snow progressively melt up, and not down the river. In all parts of the earth rivers flowing towards the poles have more rapid and excessive inundations than those otherwise similar in magnitude of volume, but having a reverse course from a more polar to a more southern latitude.

Confining our survey rigidly to the actual surface drained by the given rivers, and contained in the waters flowing into each recipient, has left out of our sketch of the Chesapeake basin any specific notice of that long strip of coast from Cape Charles to Cape Henlopen; and fromCape May to Sandy Hook.

The character of coast noticed as commencing at

the mouth of Pedee or Winyaw bay, is fully preserved along the Atlantic shores from the Chesapeake to New York bay, or, more correctly, outlet of the Hudson. In a distance of 120 miles from Cape Charles to Cape Henlopen, not a single eminence rises; long sandy islands, with extended but shallow sounds, with no opening which merits the title of a harbour. The slope drained into the Atlantic ocean between the Chesapeake and Delaware bays, is therefore in a comprehensive view an uninteresting line of 120 miles, by a mean width of about 5; or area 600 square miles.

Crossing Delaware bay we again traverse another line of Atlantic coast, of similar features and very nearly similar length, but of more depth inland. The Atlantic shore of New Jersey has more numerous, deeper, and more spacious inlets than exist in the preceding range of coast. Great Eggharbour, Little Eggharbour, Barnegat, Tom's bay, Shark inlet, and the united bays of Shrewsbury and Nevisink, and some other inlets of lesser note of New Jersey, afford shelter to vessels of considerable draught. The general surface, though still monotonous, swells perceptibly more above the level of the ocean; and finally, approaching Sandy Hook, rise on the fatigued, but now relieved sight, the Nevisink hills, the first eminence of any height deserving notice from Cape Florida, through 15° 30′ of lat., or, following the coast, more than 1350 miles.

The Atlantic slope of New Jersey is in length, about 125 miles, pursuing the elliptical inflection of the coast, with a mean width of 20 miles; area 2500 square miles.

In respect to temperature, it may be remarked, that the sandy alluvial border of the Atlantic slope, is warmer than can arise comparatively from either its elevation or geographic polar distance. Proximity to an open ocean is one cause of this phenomenon, but the higher temperature of that ocean itself

than could arise from geographic position, must be sought in more remote and controlling causes, and is found in the Trade winds, or rather in the effect of these winds, the Gulf stream.

With the basin of the Delaware terminates the middle section of the Atlantic slope, and before proceeding with a review of the north-eastern section I may be indulged in a few remarks.

I have, on more than one occasion, expressed the opinion, and sustained that opinion from the prominent features of nature, that in every essential respect, the Chesapeake and Delaware peninsula, lower New Jersey, and Long Island were specifically similar; and that Chesapeake bay, Delaware bay, and Long Island sound differed in nature only, in the circumstance of the latter having two entrances to the adjacent ocean.

The Susquehanna and Delaware in the lower part of their courses flow parallel to, rather than towards their recipients. This is so much the case with the latter river, that more than 30 miles above the head of tide water at Trenton, the channel lies parallel to, and distant only from 30 to 40 miles from the opposite Atlantic coast, outside of Amboy bay. A short distance, however, below the head of the tides, the Delaware turns to south-west, and pursues that direction 60 miles, and by a peculiar coincidence, the Susquehanna, after breaking through the Kittatinny and Blue Ridge chains, assumes a south-eastern course of 60 miles. Thus these two noble rivers obliquely approach to within twenty miles of actual confluence. But in place of mingling their streams, the Susquehanna dilates into an immense bay, turns to south, receives numerous and large tributaries from the west, and meets the ocean after having indented the continent 180 miles; the Delaware also rejecting a union with its rival, winds to the south-east, and opens into a wide bay, upwards of 100 miles distant from the entrance of the Chesapeake.

If again we return still farther south, we find a like conformation of coast in the Chowan, and other rivers and sounds.

These observations appear trite and puerile, until we glance at the moral and political effects of such a physical arrangement. In alluvial coasts similar phenomena are to be found over the earth; but compared with the Atlantic coast of the United States, these phenomena are elsewhere very limited in degree. China is, however, the only other region of the earth, with which in respect to any extensive physical theory the United States can be with any correctness compared; and it is truly worthy of attention, that what is called the Grand Canal of China, is only a chain of small artificial connexions with the natural channels of rivers, sounds, and lakes; and that acme of European canal science, the lock, is yet unknown in China. It cannot be deemed national vanity to state, that the territory of the United States, combined with modern science, will in all human probability effect in a brief period of time, not only the most extensive inland navigation, but also the most extensive improvements of that kind which the face of the earth will admit.

CHAPTER V.

GEOGRAPHICAL VIEW OF THE NORTH-EASTERN SECTION OF THE ATLANTIC SLOPE OF THE UNITED STATES.

In strictness, the basin of the Hudson, including the minor but important basins of the Rariton and Passaick, is more naturally connected with that of Delaware, than with the Connecticut; and farther, when we examine the Appalachian system of mountains we discover ample lines of demarcation to justify the divisions we have made. If we turn our eye to a good general map of the United States, and commence our review with the mouth of the Alatamaha, we behold from that estuary to Cape Hatteras, the Atlantic coast and the Appalachian system pursuing an almost parallel course of about N. 50° E., and from the Blue Ridge nearly two hundred miles apart.

At Cape Hatteras, the Atlantic coast turns to N. 12° 33′ E., if we estimate the whole distance to Amboy bay, distance 426 miles. In this section of the United States, the mountain system and Atlantic coast incline upon each other at an angle of about 40 degrees. By such inclination the mountains approach, and at the outlet of the Hudson range within 25 miles from the ocean.

When delineating the Appalachian system, the great inflection made in New York has been shewn; and that, from the basins of the Susquehanna and Delaware, north-eastward, the range of the mountains are like that of the rivers from north to south. I have also shewn, that the mountain chains were

embedded in the earth in solid cores, which were in many places partially overlaid, and concealed the continuity of the chain, which continuity was in numerous instances demonstrated by the inflections of the rivers. The North River or Hudson is, however, an anomaly in the natural history of Atlantic rivers. On either side of this peculiar chasm in the continent, the Atlantic tides are arrested by or near the primitive strata, but in the Hudson basin tides find a level nearly 150 miles above the outer verge of the primitive, and penetrate to contact with the central secondary.

The Hudson is formed by two branches, the Hudson proper, and the Mohawk. Each of these confluents deserves particular attention from having become the channels of canals actually executed and now in full use. The Mohawk rises principally in Oneida county, interlocking with Black river of Lake Ontario; flowing south about 20 miles, it suddenly turns to south-east at Rome. Here is the highest summit level, from Hudson river, near Albany, into Lake Ontario, 421 feet above the tides in the Atlantic ocean. In a state of nature, the waters of the Mohawk, at Rome, in high floods, divide; one part following the channel towards the Hudson, and the other part flowed down Wood creek into Oneida lake; consequently, the upper Mohawk had two recipients, the Hudson and St. Lawrence. Since used as a part of the Erie canal, the level, near Rome, is continued each way, and the canal carried upwards of 60 miles on one plain. From this table land the Mohawk flows south-east 28 miles to where it receives the first considerable northern confluent, West Canada, about one mile below the village of Herkimer. Here it assumes nearly an eastern course of five miles to the Little Falls, where it passes the Catsberg chain over a ledge of primitive rocks. Below the Little Falls the Mohawk turns to S. E. by E. 70 miles, receives East Canada from

the north, and Schoharie from the south, passes over the Cahoes Falls, and joins the Hudson at Waterford, after an entire comparative course of 123 miles.

This basin is remarkable as forming a deep vale through the chains of the Appalachian system; and for rising on the central secondary and forming its outlet into the ocean tides. The Erie canal is carried, except in one instance, between Schenectady and Albany, along the right or southern side. The extreme north-western source of this fine river is in Lewis county, N. lat. 43° 31′, long. W. C. 1° 35′ E.; its junction with the Hudson at N. lat. 42° 46′, long. W. C. 3° 20′ E.

The Hudson is formed by two branches, Hudson proper and Sacondago. The remote north-western sources of the Hudson rise at once in a mountainous and marshy region of Essex and Hamilton counties; but another branch called the N. E. Hudson rises in Essex, between the main branch and Lake George. After a general course S. S. E. of 40 miles each, the two branches unite in Warren, and continuing south 15 miles, receives the Sacondago, between Warren and Saratoga. The Sacondago rises, one branch in the western part of Warren, and another in the south-eastern angle of Hamilton. Flowing south about 40 miles, to the village of Fish-house, now Northampton, on the line between Montgomery and Saratoga, the Sacondago rapidly turns to N. N. E. 20 miles, and thence gradually curving to the east joins the Hudson, below Jessup's Falls. The united stream, now a considerable river, flows a little E. of S. 15 miles, is again precipitated over a ledge of rocks, called the Great Falls; bends to north-east 20 miles, is once more borne over another stratum, and forms Glenn's Falls.

It is at the latter falls, that the Hudson enters that most peculiar valley, perhaps in the world, and which has been noticed in Chapter II.—p. 80, 81.

Of this interesting vale, the highest elevation above tide water is the plain between Glenn's Falls and Wood creek, a small confluent of Lake Champlain entering at White Hall. This plain, only 140 feet above tide level, is the lowest summit level between the surface of the Atlantic and that of the St. Lawrence basin. Advancing northward beyond the Wood creek level, by a descent of 52½ feet, we are brought to the verge of Lake Champlain. The mind is with difficulty, even by aid of mathematical demonstration, led to believe that this expansive sheet of water is only 87½ feet above the surface of the Atlantic ocean: surrounded by the most imposing mountain scenery, the traveller on the shore of Lake Champlain, seems in imagination raised to Alpine heights, and feels unwilling to acknowledge, even to his own mind, that less than one hundred feet lockage along the Chambly and St. Lawrence, would bring him down to the swell of the ocean.

There is but one more pass known on the earth having a specific resemblance to that of Hudson and Lake Champlain. Scotland is divided into two unequal sections, by what is well expressed in that country by the term Glen, signifying a narrow and deep vale between high and steep hills or mountains. The Scottish glen declines a little towards the meridians from north-east and south-west, extending from the Atlantic ocean into the German sea, about 120 miles; having no summit above 70 feet, though bounded by high and craggy mountains.

In one respect these two vales excite astonishment; in their extent they deviate so little from a direct line as to almost appear the effects of large masses of solid matter having been impelled with prodigious velocity over the earth's surface. In both, the lakes as well as the rivers obey the general direction; and in the Scottish glen, the Murray frith, Loch Ness, Loch Oich, Loch Lochi, Logh Eil, and the frith or Loch Linhe, supply the same office

performed in North America by Hudson river, Wood creek, Lake Champlain, and Chambly river. Both passes have been recently made navigable; that in North America by the Champlain canal, and that in Scotland by the Caledonian canal. Perhaps no two facts in history more strongly mark the progressive advance, not alone of improvements in means of transportation, but in an infinitely more important subject, the human mind. But we must resume our survey.

Falling over Glenn's Falls, the Hudson turns to a course a little west of south, which it maintains with slight deviation 186 miles to the Atlantic ocean at Sandy Hook. Thirty-five in a direct line, but 43 following the river, and by a fall of 104 feet, the volume flows from Glenn's Falls, to the tide level at the junction of the Hudson and Mohawk. Below tide water, though the character of a river is imperceptibly changed to that of a bay, the mean breadth would not amount to one mile. In all its length above the island on which New York stands, it is bordered by a very rapid acclivity. This acclivity is in many places precipitous mountain masses, but in some other places more gentle. Few rivers of the world afford a more rapidly varying suit of landscapes. Leaving the city of New York, the channel appears as an interminable vista, lined on the western shore by appalling walls of primitive rocks; on the other a highly cultivated country sweeps by a bold acclivity from the river brink. These contrasts continue to the Highlands, where enormous mountain peaks rise at once on both sides to an elevation of 1200 or 1500 feet. The channel seems to have been rifted by some force too overwhelming to admit pleasing contemplation. We feel that when such chasms were burst, the earth itself must have trembled to its centre. This is a pass that few can traverse without sensations of deep interest. It is the only instance known, except that

of the St. Lawrence, of the ocean tides passing through a primitive mountain chain, and carrying depth for the largest vessels. Ascending through the Highlands past West Point, a new world seems to open; the banks remain bold, rocky, and often precipitous, though not mountainous; the farm-houses and villages seem to hang upon the cliffs, or to rise by stages from the water edge. In a few places bottoms occur, but they are rare and limited in extent. In brief, if performed in open day, a voyage along the Hudson is one of the most desirable in the United States; but generally, in a passage by a steamboat, one or other extremity is made in the night, and of course unseen by the passengers.

Flowing in a deep chasm, the Hudson is seldom seen, and in no place to advantage, from the roads along either bank. The adjacent country rises abruptly to upwards of two hundred feet, and thence sweeps backward to the mountain chains in such manner, that the traveller would seldom suspect from the ordinary appearances that a large river covered with vessels flowed in the vicinity. This is the case in some of the villages, particularly Poughkeepsie and Rhinebeck. Peekskill, Newburg, Hudson, and Albany, rise by stages from the river. West Point stands on a high though confined plain. Troy is the only town on this river which has been built on an alluvial bottom. Following the Hudson proper, above the entrance of the Mohawk, the features of the united stream are generally preserved; but along the latter a new character of scenery prevails. Above the Cahoes Falls secondary rock forms the substratum, precipices in a few places occur, though of no great elevation; at Schenectady, Herkimer, Utica, and Rome, extensive flats spread between the hills. The Herkimer flats above the Little Falls have all the appearance of having once formed the bottom of a lake. In general, however, the banks rise by gentle ascent, giving a soft and

pleasing, rather than romantic air to the landscape. At the Little Falls the scenery is wild and broken, and above the village, strongly contrasted with the expansive alluvial bottoms of Herkimer. Here are incontestible monuments of a change of height in the ledge which crosses the river. The action of the water on the rocks is visible 30 or 40 feet above the present level of the stream. Such an elevation would inundate the valley of the river to Rome; and every indication of the intermediate space exhibits traces of not very ancient submersion; and as the surface became more and more exposed as the barrier wore lower, extensive marshes must have existed between the periods of actual submersion and desiccation of the soil.

As a navigable channel, that of the Mohawk is of invaluable importance. The little elevation of its summit level afforded an easy execution of a canal along its banks, which facility was again enhanced by the nature of the banks themselves, and still more by a contiguous country of exuberant fertility.

In respect to the mountain valleys, the Hudson basin is divided into three sub-basins. The higher and most extensive above the Catsbergs; the middle between the Catsbergs and the Highlands, and the lower south from the Highlands.

The upper or northern basin includes an irregularly limited space, with a base of 140 miles from the sources of the Ancram and Claverack creeks, to those of the Mohawk, and perpendicular of 130, with an area of 9000 square miles. The relative elevation, is in an inverse ratio to the distance from the ocean. The southern limit of the basin west from the Hudson, the Catsbergs, rise in Windham Green county to near 4000 feet. The Round Top is 3804, and the High Peak 3718 feet above the tide level of the Hudson, about 18 miles distant. This is the highest mountain elevation, excepting perhaps the Peaks of Otter, of the Appalachian system

south-west from the Hudson. The small river Schoharie rises in the Catsbergs, and in their most elevated valleys, flows first north-west but turns to northward, and enters the Mohawk, 42 miles by the windings of the latter above its mouth. The Schoharie in a course of only 60 miles falls upwards of 3000 feet, and enters its recipient 286 feet above tide level. The extreme north-western sources of the Mohawk are perhaps about 1000 feet above tide level, consequently the fountains of the Schoharie are 2500 feet above those of the Mohawk.

The continuation of the Catsbergs, after they pass the Mohawk at the Little Falls, are known in Herkimer, Montgomery, and Hamilton counties as the Sacondago chain. This chain, in Hamilton, forms a nucleus from which the rivers flow like radii from a common centre, but its elevation has never been ascertained with precision. Standing on the heights between Ballston Spa, and Schenectady, where the Catsbergs, distant 45 miles, the Green Mountain chain of Massachusetts and Vermont, distant 40 miles, and the Sacondago, distant 40 miles, are all distinctly seen, and comparing each with the others, I should be led to give an elevation of at least from 1200 to 1500 feet to the latter chain. If the preceding estimate is correct, the Hudson flows from a table land of upwards of 1000 feet elevation.

On the eastern side of the Hudson, again the Green Mountain chain of Vermont, Massachusetts, and even Connecticut, rises as an immense buttress from which the branches of the Connecticut river and Housatonick are poured with great rapidity. Into the superior basin of the Hudson are discharged from the Green Mountains westward, the small but impetuous streams of Batten Kill, Hoosack, Kinderhook, and Claverack. The longest of these creeks, the Hoosack, has a comparative course of about 30 miles; but the mean slope of the basin, from the table land on which the Green Mountains

stand, does not amount to 20 miles in width. The table land is at least 1000 feet above tide level, therefore this narrow slope falls that depression in 20 miles, or in 105,600 feet.

The preceding elements will enable the reader to conceive the general features of this singular region. If we turn our attention to a map of New York, and take the head of tide water in Hudson river or bay as a point of observation, we behold a deep chasm into which are poured numerous rivers of greater or less magnitude, and of these radiating streams the one coming from the greatest distance inland flowing from the least elevated table land.

As respects geographic position, this superior basin extends from N. lat. 42° 08′ to N. lat. 44° 08′, and in long. from W. C. from 1° 30′ to 4° E. It will, however, be at once perceived, that in a region where relative height is so peculiarly distributed, that lines of latitude are only one set of elements in forming a theory of temperature, we might expect to find rapid transitions in the seasons, on very limited change of place, and such is the case. I have been in Albany with every appearance of opening spring, whilst snow and ice were abundant within 20 miles in almost any direction. The difference of temperature between New York and Albany is also much greater than could be calculated from not quite two degrees of latitude upon an equal level. The great depression of the thermometer at Albany, arises, in part, from the surrounding mountains, but probably more from the deep vales of the Mohawk and Hudson opening vents for the winds of the north and north-west.

The middle sub-basin of the Hudson, between the Catsbergs and the Highland mountains, lies in form of a parallelogram of about 40 by 50 miles, or 2000 square miles. The features of this tract are in themselves strongly illustrative of the superficial structure of the Hudson and Delaware basins. If

we recur to the notice of the latter basin, we find that the Kittatinny chain leaves Pennsylvania and crosses Delaware river at the mouth of Broadhead's creek, and continuing a north-east course through New Jersey, enters Orange county, New York, at the great bend of Delaware, below the mouth of Nevisink river. This chain is continuous across Orange, Sullivan, and into Ulster county. One of its ramifications is known as Shawangunk, in the south-west part of Ulster.

The Blue Ridge passes Delaware river at the mouth of the Lehigh below Easton, and is also perpetuated in, and over New Jersey. In the latter state, by the common negligence of map makers, the Blue Ridge is sometimes omitted, and if noticed, confounded with the South-east mountain. The latter separates Bucks county from Lehigh and Northampton, whilst the former, about 5 miles more north-westwardly, passes the southern part of Lehigh, turns the course of Lehigh river at Allentown, and as has been stated, enters New Jersey opposite Easton. In their prolongation towards the basin of the Hudson, the two chains, generally humble in point of either mass or height, remain distinct, the Pohatcong and Musconetcong rivers draining the narrow intermediate valley upwards of 40 miles. Inflecting, as do the whole Appalachian system, to the north between the main volumes of Hudson and Delaware, the Blue Ridge is continuous to the former, and forms the Highlands. The South-east mountain also sustaining its identity and close range with the Blue Ridge, the two chains are apparently, but not really, blended in the Highlands. It has been almost universally overlooked, that West Point Military Academy was situated in a mountain valley between two chains. This interesting fact was introduced in this place as a necessary feature in delineating the middle basin of the Hudson.

It must be evident from the data given, that deep

mountain vallies extend in an oblique direction between the two basins of Delaware and Hudson; and also from the Hudson into the basin of St. Lawrence. This is so far the case, that if the highland strait below Newburg was closed only about 160 feet above the present tide level, the whole mass of water above would leave the basin by the route of Lake Champlain, and Chambly rivers; or if the latter opening did not exist, a rise of 400 feet in the Hudson level would precipitate its discharge into the Delaware, along the vale of the Wall-Kill and Pawlin's creek.

Pawlin's creek rises in Sussex county, New Jersey, and flowing south-west, along, or near, and parallel to the Kittatinny chain, enters Delaware river about 4 miles below Delaware Water Gap, after a course of 25 miles. The Wall-Kill heads also in Sussex county, New Jersey, interlocking sources with Musconetcong and Pawlin's creek, but, flowing in an opposite direction, follows the north-eastern range of the mountain chains 65 miles, and falls into the Hudson at Eddyville near Kingston. The course and features of this latter stream are real phenomena. Influenced as it evidently is, by the mountain structure of the region over which it flows, the Wall-Kill valley has its inclination directly in an opposite course to either of the much greater rivers in its vicinity. It is not 30 miles from the head of tide water in the Passaic to the sources of the Wall-Kill, whilst the influx of the latter with the Hudson is upwards of 80 miles above the city of New York.

The character of country drained by the Wall-Kill is still more a subject of interesting investigation, than even its anomalous course. In Sussex county, of New Jersey, and Orange county, of New York, the upper part of the valley of this stream has all the aspect of an inundated estuary, and is with propriety called the drowned lands. From 35 to

40 miles in length, with from 5 to 7 miles wide, this tract is demonstrably the remains of a lake yet but partially desiccated; it is in most places as flat and marshy as the shores of any part of Louisiana, and the eye involuntarily seeks at every step the open ocean. To the mind of the geographer it suggests the once general aspect of the Appalachian vallies. The numerous *gaps* without existing streams, and other passes where rivers continue to flow, with a combination of relics, attest the former existence of extensive lakes, which the abrasion of flowing water has drained. In the very slow progress of drainage, flat swamps would of course succeed to actual submersion.* The "Drowned Lands" are not, however, altogether reduced to the marshy state; some small lakes lie scattered over this region, which are perennially supplied with water. It is in reality on a small scale what, in early and remote ages, was much of the present most productive soil of the United States.

At the risk of being thought minute beyond necessity, I cannot neglect to notice Esopus creek, another small confluent of the middle Hudson basin. The Esopus rises in the eastern spurs of the Catsbergs, in the southern part of Greene and northern of Ulster county. Flowing in a very direct northeast course 25 miles, until within four miles from the Wall-Kill at the mouth of Rendout creek, it thence winds abruptly to north of north-east, and flows upwards of twenty miles, almost parallel to the Hudson, before it enters that recipient at Saugerties. For several miles on each side of Kingston or Esopus, the Wall-Kill and Esopus run parallel at about three miles distance from each other, and for the last ten miles of its course above Kingston, the peninsula between it and the Hudson is in no one place three miles wide.

* See Mohawk Valley.

On the eastern side of the Hudson, the slope of the middle basin is more confined in its width than the western. The continuation of the Blue Ridge from the Hudson above West Point, inclines north-east along the southern side of Dutchess county about 20 miles, and thence turns to a little east of north, almost parallel to Hudson river, distant about 20 miles; and which course and distance from the Hudson and Champlain basin, are preserved with very partial inflections into Lower Canada.

From this chain, in the middle basin, flow into Hudson the small but rapid creeks, Jansen's creek, Wappinger's creek, and Fish-Kill, each supplying an immense water power, from the perennial steadiness of discharge and very great descent of volume.

Jansen's creek, more frequently designated Ancram creek, from the much and justly celebrated iron works on it, rises in the Blue Ridge, and flowing south-west over the south-east angle of Columbia fifteen miles, winds by a regular curve, in the northern part of Dutchess, to a north-west direction, re-enters Columbia, and joins the Hudson about three miles below the village and mouth of the Catskill.

Wappinger's and Fishkill creeks rise within and have their entire course in Dutchess county, flowing from north-east to south-west; the latter entering Hudson directly opposite Newburg, and at the northern foot of the Blue Ridge, called there, with great absurdity, Fishkill mountains.

The melting of the ice, the advance of vegetation in spring, and the cutting of grass and grain, evince a remarkable difference of temperature above and below the Blue Ridge or Highlands. So great a change in so short a distance, arises, no doubt, from the intervening mountains, as the general elevation of the banks remains nearly the same. In soil, climate, diversity of surface, and advanced cultivation,

the three counties of New-York—Orange, Ulster, and Dutchess—great part of each of which are comprised in the middle valley of the Hudson, form one of the most desirable sections of the United States. The three counties contained in 1820 an aggregate population of 118,000, or 38 to the square mile; though those parts near the Hudson were much more densely peopled. Lying in the direct route of one of the most frequented thoroughfares in America, this part of New-York offers a rich reward to the traveller, and a most commodious residence to those whose means permit the enjoyment of cultivated retirement from the business, but who desire to retain the luxuries of society.

The outer, lower, and southern basin of the Hudson, has become a section of the earth demanding the highest attention from the geographer. The city of New-York, already ranking in the first list of emporia, is augmenting in population, wealth, and trade, with a rapidity and promised stability, of which the history of human improvement affords no other equal instance.

By the estuary of the Hudson in this view is meant, that indenting of the coast of the Atlantic ocean, between the western end of Long Island and Sandy Hook in New-Jersey. This bay, known locally by the name of Amboy bay, receives the Hudson from the north, the Passaic from the north-west, and the Rariton from the west. Taken with this extent, the lower basin of the Hudson extends from the southern sources of the Millstone branch of Rariton, N. lat. 40° 13′, to the mountains below West Point, N. lat. 41° 23′, and in long. from the extreme western sources of the Rariton, 2° 02′ E. to the eastern sources of Croton river, 3° 48′ E. W. C. The direction of this basin is from N. N. E. to S. S. W., about one hundred miles in length, with a mean width of thirty-five; area, 3500 square miles.

For all moral and political purposes, Long Island

is connected with the basin of the Hudson, and even physically the connection between the two tracts is so intimate as to warrant their union in a general view.

So much has already been given on the Hudson itself, that little need be added in this place. From the foot of the Highlands to the city of New-York is within a small fraction of 50 miles. At the point on which the lower part of the city is built, the Hudson dilates into a spacious basin of about 5 by 4 miles; into the north-east angle of which the East river or the western termination of Long Island sound enters, and gives to the city of New-York two great entrances from the ocean. Staten Island extends in an elliptic form from New-York basin to the mouth of the Rariton, with a length of 12, and mean width of about 5 miles. Between the western end of Long Island and the extreme eastern cape of Staten Island, the Hudson, by the strait called correctly the Narrows, terminates its course in Amboy or Rariton bay.

At the head of Staten Island, and from the south-west angle of New-York basin, a strait of three miles extends into Newark bay, or more precisely, with Passaic bay. This latter sheet of water receives into its northern extremity Passaic and Hackensack rivers, and at its south-west angle contracts into a narrows trait designated Staten Island sound, or "The Kills," which, after a S. S. W. course of 9 miles, forms one mouth with Rariton river into Rariton bay. Thus with Staten Island sound and the Hudson, and with the two entrances from the Atlantic ocean, New-York harbour has four outlets.

When treating on the general structure of the Appalachian system, I have observed that the primitive ledge, or, more accurately, the outer core of that system, ranged through New-Jersey from Trenton. This chain is distinct in Hunterdon, Somerset, Essex, and Bergen counties. In Essex it

rises into considerable ridges, and is visible from the most elevated part of Staten Island, and from Long Island between Brooklyn and Flatbush, distant about 15 miles from the City of New-York. In most places farther to the southward, the primitive strata ends in an abrupt ledge, but in the vicinity of New-York it extends open to the day, and underlays the shores of the main land and islands around that city. In the basin we are now surveying, the range of the rock strata is in a perfect accordance with that of the section of the Appalachian system to the north-west from New-York. I have shown, when treating of the mountain systems generally, that the Appalachian, in Pennsylvania, New-York, and New-Jersey, curves to the north. The convexity of this curve is in the latter state and vicinity of the city of New-York. We now proceed to examine in detail the minor sections of the lower, or sub-basin of the Hudson; a survey, from the relative importance and peculiar physical features of this region, and the commercial, moral, and political importance of New-York, necessarily minute.

Amboy bay, or the real mouth of the Hudson, is, in respect to the Appalachian system, the extreme concavity of the great middle bay of the Atlantic slope. Into the south-west angle of this indenting, the small tide river the Rariton is poured from New Jersey. The Rariton is formed by three branches; the Rariton proper, Millstone and Alamatong rivers. The Rariton river rises in the south-east mountain, at N. lat. 40° 55′, long. W. C. 2° 16′ E., and in Morris county; assuming a south-west course of 25 miles, passing into Hunterdon, and, curving to south-east 12 miles, enters Somerset; in the latter, inflecting to an eastern course of 15 miles, in which the main stream is augmented from the north by the Alamatong, or Black river; and below their junction the united water passing Somerville, three miles below, receives Millstone river from the south.

Millstone river rises in the western part of Monmouth county, N. lat. 40° 14′, on the sea sand alluvion, and by an anomalous course, which has no other similar case in the United States, flows north-west from the alluvial over the outer verge of the primitive strata. The Assanpink creek of Delaware, heads with and flows parallel to Millstone, about twelve miles, until each encounters the primitive ledge; here the former is turned south-west into Delaware, which it enters at the head of tide water at Trenton: on the contrary, the Millstone, receiving Stone creek from the west, crosses the outer primitive, and turning 15 miles nearly in a northern course, unites with the Rariton below Somerville.

After receiving the Millstone, Rariton flows north-east 3 miles, and is again augmented by Green branch at Boundbrook from Essex, and turns to south-east 8 miles to New-Brunswick, where it meets the ocean tides, and thence continuing east 4 miles, quits the primitive and receives South river from the south, and continuing east 8 miles, is lost in Amboy bay.

The small but interesting basin of the Rariton lies in form of a parallelogram, 45 miles in length from south-east to north-west, and 24 wide from south-west to north-east; area, 1080 square miles. The ocean tides only penetrate to New-Brunswick, 12 miles. Lying within the limits of two-thirds of a degree of latitude, the transition of climate between the northern and southern extremes is very striking. I travelled from Newtown in Sussex county in the latter part of September 1823, over the intermediate mountains, and down the valley of the Rariton. I left Newtown on the morning of the 28th, with a heavy white frost, the effects of which were gradually diminished advancing through the western part of Morris and northern of Hunterdon counties, and slightly visible between Somerville and Trenton. Here relative elevation and more southern latitude combine to produce a melioration of temperature.

It is, however, from the facility it offers to artificial inland navigation, that this basin demands most attention. Extending almost parallel to that reach of the Delaware from South-east mountain to Trenton, the sources of the Rariton rise within five miles of the former river, and continue not very variant from that proximity 35 miles. Within these limits two canal routes have been proposed; one by the Rariton, and the other by the Assanpink and Millstone rivers. The singular departure of the latter from the otherwise universal course of the Atlantic rivers of the United States, as respects the primitive rocks, offers a *unique* opening from the Atlantic alluvion over the primitive formation. This subject will again be noticed under the head of New-Jersey.

Naturally connected with that of Rariton, follows the still less extensive sub-basin of Passaic. The small bay of Newark, between Essex and Bergen counties, is the common estuary of Passaic and Hackinsack rivers.

Passaic, entering their common recipient at Newark, is formed by two branches, Pompton or Ramapo, and Passaic proper. The Ramapo rises in the south-east mountain in Orange county, New-York; flowing thence nearly due south, about fifteen miles, passes the western angle of Rockland county, and enters New-Jersey. Thence turning to S. S. W. ten miles, receives from the north-west the Pequanack, and inflecting again to the south five miles, unites with the Passaic, between Morris and Bergen, and opposite Essex county.

The Passaic rises in Somerset county, within the curve of Black river and Rariton, and flowing thence 15 miles, forming for the greater part of the distance the boundary between Morris and Essex. Gradually winding to the north 10 miles, receives the Rockaway from the west. Though the extreme source of the Rockaway is in Sussex, it is mostly a stream of Morris county, with a general course of

about twenty miles. Below the union of its main branches, the Passaic winds by a circular curve five or six miles, and gaining an eastern course receives the Pompton from the north.

Thus far the Passaic drains a region, which, though not generally so considered, is in reality a mountain valley. It is, however, only in New Jersey and New York that the primitive ledge is surmounted by eminences assuming the mountain form. Passing the Delaware at Trenton, and advancing along the turnpike road to New Brunswick, a ridge is seen to the left, which, as has been noticed, is traversed by the Millstone river. The chain is again broken by the Rariton, between New Brunswick and Boundbrook, and becomes so elevated in Essex county as to be known as the Newark mountains. Once more this chain is broken by the Passaic, which passes it between Essex and Bergen counties, and stretching over the latter into New York is there again recognized in the Haverstraw mountains in Rockland county, and is the chain which passes the Hudson near Peekskill.

The general courses of the Pompton and Passaic, are directly towards each other, down the western side of the chain we have delineated, but when near actual confluence, the latter stream bends to the east by a regular curve, and receiving the former at the mountain foot, the aggregate stream, assuming a south-eastern course of two miles, enters the mountain chain, and again bends to north-east about two miles, falls over a ledge of rocks, and about four more is again precipitated 59 feet at Patterson. Below Patterson Falls the Passaic curves to a southern course of from 12 to 14 miles to its final egress into Newark bay.

Into the north-east angle of the latter bay is also discharged the unimportant stream the Hackinsack. Viewed on a map, the small pond in Rockland county, which forms the superior source of the Hackinsack,

appears almost united to the Hudson; on the contrary, however, they are separated by enormous walls of rock, which, rising at least 400 feet from the Hudson in broken precipices, falls more gradually towards the interior part of Rockland county. From its source to its efflux into Newark bay, the Hackinsack, in a course of 30 miles a little west of south, receives few tributary streams, and though the tide flows up its channel about 20 miles, it is, in a navigable point of view, of little relative importance.

If taken together, the united basins of the Rariton and Passaic are, with a small fraction of Hunterdon and Monmouth, nearly commensurate with Morris, Somerset, Essex, and Bergen counties, in New Jersey, and Rockland, in New York; about 80 miles from north to south, with a mean width of 30 miles; 2400 square miles.

On the eastern or left shore of the Hudson, and in its lower basin, though the face of the country remains bold and broken, the scenery is much less prominent than along and contiguous to the opposite shore. From Westchester county, the small river Croton enters the Hudson at Singsing, and through the Bronx is discharged into Long Island sound; from its position it must be included as a stream of the lower Hudson basin. The Bronx also in a very striking manner illustrates the peculiar structure of this basin. Rising in Westchester county, nearly east from the sources of the Hackinsack, those of the Bronx unite, and flowing a little west of south, almost parallel to the Hudson, enter Long Island sound at the head of Flushing bay. If the Bronx, Hudson, Hackinsack and Passaic are viewed together on a map, they appear to flow in channels with so much conformity of course as to mock the efforts of art; and what is still more remarkable, if the review is carried westward to the Delaware, the latter again appears to have received part of its channel from the same cause which operated to give features to the

estuary of the Hudson. But even thus far the moulding cause we have noticed does not appear to have been limited. The Susquehanna from Pennsboro' to the mouth of Juniata, has evidently been directed by similar agency, and over a large region we trace in the rivers of Pennsylvania, New Jersey, and New York, a regularity of course which could originate only from some single and powerful cause.

The actual estuary of the Hudson, with its islands and minor rivers, appears to be based on primitive rock, and in fact the channels of the streams to be, though level with tides, similar in other respects to the most elevated mountain gaps. Viewed in this manner, Manhattan Island, Staten Island, and Long Island, are the most prominent elevations of this section of the Appalachian system.

Manhattan, or New York island, is an irregular oblong of twelve, by about one and a half miles, or about 18 square miles. It is bounded west by the Hudson; north, by a small bend of Haerlem straits; east, by the residue of Haerlem straits, and that part of Long Island sound called East river; and south, by New York harbour. The base of this island is kneiss and primitive lime-stone, the range a little E. of N. E. No part of Manhattan island is much elevated, though the surface is waving and in part hilly; the outer edge in its natural state generally an alluvial marsh. The superstratum of the whole island a mass of sand and rounded pebble; the latter of all sizes, from that of sand to rolled masses of several tons weight.

Staten island, extending in a similar direction with the preceding, rests also on primitive rock, and is bounded north, by Newark bay, New York bay, and their small connecting strait; and on the west, by Staten Island sound; on the south and south-east, by Amboy bay; and on the east, by the Narrows, or by the real outlet of the Hudson. Length nearly thirteen, mean breadth four,

and area 52 square miles. This beautiful island rises by a not very gentle acclivity to a considerable elevation. It is similar to Manhattan, bordered by a selvedge of more or less width of alluvion. The surface is, however, highly diversified, and from some of its most elevated hills are opened, perhaps the most variegated landscapes on the Atlantic coast of the United States. It is a place in the vicinity of New York which no traveller ought to neglect. In a clear day, a single hour on some of the hills of Staten island is worth a voyage of considerable length. Around it is an immense sweep of vision over New York, and its treble harbour; Long Island with its swelling hills and numerous farms; the coast of New Jersey, in a circular sweep of 40 miles from Paulus Hook to Nevisink hills and Sandy Hook light-house; and to complete the truly splendid scene, the interminable Atlantic ocean opening between Sandy Hook and Long Island. This noble picture enlivened by all the activity of commerce, decorated by all that art can give to embellish features naturally glowing with all the most attractive lineaments of hill, dale, and diversified water surface. How many who visit New York, with all the means of gratification, and who travel for mere amusement, lose the invaluable pleasure of scanning the rich perspective from Staten Island? Thousands and tens of thousands.

Long Island, though of different form, is in the principles of its structure, in every other respect, similar to Manhattan and Staten Islands. This very important island, extends geographically from N. lat. 40° 34′, to N. lat. 41° 10′, and in long. from W. C. 2° 58′, to 5° 8′ E. Length from the Narrows to Montauk Point, by actual calculation 120 statute miles; the mean range is N. 69° 44′ E. The breadth from the Narrows to Peconic bay, varies from 10 to 18 miles, in a distance of 80 miles. Above, as is usually expressed in reference to the city of New

York, Long Island first widens about 30 miles, and thence more slowly contracts in the next 50 miles to Peconic bay. The latter irregular sheet of water, and its continuance Gardiner's bay, separate the eastern or rather north-eastern part of Long Island, into two peninsulas, the longest and outer of which is terminated by Montauk Point. The interior peninsula, bending out of the general course of the island, curves to N. N. E., ending in Oyster Point, but evidently continued in Plumb island, the two Gull islands, Fisher's island, and the point of the continent south-east from the mouth of Paucatuck river.

A ridge of hills rising in some places to considerable elevation, forms the northern side of Long Island, and might be correctly called its spine; and from which sweeps towards the Atlantic ocean an alluvial margin of from one to five or six miles wide. This extensive plain, with a gentle slope from the interior ridge, is followed by a range of narrow sounds, which extend from the southern outlet of the Narrows, to Sagg point, about 100 miles, and outside of these sounds by a chain of long, and narrow, low sandy islands. When critically examined, it is almost self evident that the intervening alluvial slope or plain has been formed by a similar process, which is yet in progress with the islands, and that, in the lapse of time, the sounds will fill up, and, with the islands, extend the alluvial border some miles farther into the Atlantic ocean. The shore of the main islands within the sounds is very irregular, but that of the sandy islets, exposed to the eternal rage of the Atlantic, stretches, in a finely drawn line, as if every asperity was removed by art. This is, however, a trait in common with all sandy shores exposed to oceans, seas, or large lakes; and it is a feature strongly exemplified along the Atlantic border of the United States.

Though no spot on Long Island affords the expansive landscape which opens from the heights of Staten Island, the scenery of the former is yet highly attractive, and not so monotonous as from the simplicity of its structure might be supposed. The three principal roads, northern, middle, and southern, lead to a pleasing variety of hill, dale, and plain, and in many places present around the traveller the well cultivated fields of the island itself, and beyond, to the north, the bosom of the sound with the hills of Connecticut on the distant horizon. To the south, the beautiful sweep of the plain carries the eye to the never tiring Atlantic. In a tolerably extensive range over the United States, I have seen no part of equal extent more worthy of the traveller's time and expense. The middle road of Long Island, composed of sand and gravel, has the firmness of the latter with the smoothness of the former material, and I have read and enjoyed the lanscapes from a carriage without feeling much more sense of uneasy motion, than if in a boat on a tranquil sheet of water.

In addition to its moderate elevation, the temperature of Long Island is influenced, like that of all other islands, by the contiguous ocean, and sound, and is more mild and more moist than the adjacent continent. The difference is even greater than could be expected from the agents we have adduced. The winter seasons of Suffolk county, in Long Island, are indeed very different from those of central New Jersey or central Pennsylvania, with allowance made for difference of elevation and oceanic exposure. Something must be due to the respective components of soil.

The remark may be here repeated, that Long Island sound partakes of the general character of other sounds, along the Atlantic coast of the United States. It is a bay with two outlets to the ocean. If considered as extending from the battery at New

NEW ENGLAND
Note. The figures along the roads indicate the distances from place to place.
Long. E from Washington
LOWER CANADA
NEW BRUNSWICK
MAINE
NEW HAMPSHIRE
MASSACHUSETTS
CONNECTICUT
ATLANTIC OCEAN
Anson to Quebec 170 miles
Moosehead Lake
Bungah Quohem L.
Penobscot R.
Kennebeck R.
R. St. Lawrence
R. St. Croix
Grand Lake
QUEBEC
Three Rivers
Lake St. Peter
Lake St. Francis
MONTPELIER
CONCORD
BOSTON
HARTFORD
NEW HAVEN
NEW LONDON
PORTLAND
Portsmouth
Newburyport
Salem
Bangor
Hallowell
Burlington
Springfield
Worcester
Providence
Cape Cod
Nantucket I.
White Hills
Miles.
5 10 20 30 40 50 60 70

York to Fisher's Island, the length of the sound is almost to a mile the same as Long Island ; and though the position of the parts is in reverse order, the shape and area are very nearly similar.

Long Island we have shewn to be 120 miles long, with a mean breadth of about nine, or area 1080 square miles. The widest part of the island is from Lloyd's Neck on the sound, along the line between King's and Queen's counties 20 miles; the widest part of the sound is in a line a little east of south, from New Haven harbour to River head in Long Island, within less than one mile of the longer diameter of that island. Proceeding from New York, the sound by a very tortuous course of 16 miles, varies from half a mile to two miles wide. Of this distance, from the battery to Haerlem river is N. N. E. eight miles, and thence again by a like distance nearly E. to Frog Point. The bend opposite Haerlem river is the noted pass called Hell-gate, or Hurl-gate. Above Frog Point, the sound, properly speaking, commences, and turns to N. E. 18 miles between Lloyd's Neck and Stamford in Connecticut. Thus far the shores are rugged and the channel rocky, and much interrupted by small islets, and projecting points; but beyond Lloyd's Neck it opens into a noble elliptical expanse of water, from 8 to 20 miles wide, and with depth sufficient for the largest vessels of commerce or war. This splendid bay presents along its northern shore a continued picture of gradually rising hills, bold promontories, and commodious havens. Beside many of lesser note, it receives from Connecticut, the rivers Houssatonick, Wallingford, Connecticut, Thames, and Paucatuck. The deeply indented shores are decorated by the towns of Greenwich, Stamford, Norwalk, Fairfield, Bridgeport, Stratford, Milford, New Haven, Brandford, Guildford, Killingworth, Saybrook, New London, and Stonington.

It is when leaving New York, and traversing the variegated promontories of West Chester county, and of Connecticut, that the traveller feels the strong contrast with the monotonous sea border, south-west from the Hudson basin. Advancing up the sound of Long Island the eye perceives at every step that a new region is entered, and the imagination is roused by landscapes becoming richer, bolder, and more varied, at every inflection of the road.

It would be no very violent stretch of theory, to consider the rivers entering the northern side of Long Island sound, as forming part of Hudson basin; but in order to preserve perspicuity, I shall survey each individually.

With some small intervening creeks, and at a distance of about 55 miles from New York, Houssatonick river enters Long Island sound. It has already been shewn, that between the Delaware and Hudson basins, the Appalachian system by a circular curve, declined from a north-eastern to a northern direction. A natural consequence of such a curve in a system containing several chains, must be to give a more and more extended sweep to those on the convex side of the circuit. We have shewn, that the Kittatinny chain was continued in the Catsbergs; that the Blue Ridge was continuous over New Jersey, and again in New York extended to, and was broken by the Hudson, below Newburg; and that the south-east mountain of Virginia, and Pennsylvania, was also distinct over New Jersey and New York to the Hudson, which it crossed below West Point. It is one of the many instances of the singular inattention of map compilers to the mountain chains, that the two chains which traverse Hudson below Newburg have been confounded, or the exterior chain altogether omitted; and yet it is the continuation of this neglected south-east mountain which forms the great separating spine between the Hudson and Connecticut basins. The south-east mountain after leaving the Hudson, continues N. E.

about 30 miles, and gradually complying with the general bend of the system, leaves New York, and in the north-west angle of Connecticut, inclines to a course a little E. of N., which is perpetuated with slight inflections into Lower Canada.

In the valley between the two chains we have been designating, and interlocking sources with Hoosack and Kinderhook branches of the Hudson, and with Westfield branch of Connecticut, rises, in Berkshire county, Massachusetts, the Houssatonick. With one abrupt bend of 5 miles to the west near Stockbridge, the Houssatonick flows 70 miles down the mountain valley in which it rises; 40 in Berkshire county of Massachusetts, and 30 in Litchfield county of Connecticut. Turning to south-east, it breaks through the south-east mountain, crosses the south-west angle of Litchfield, and again separating New Haven and Fairfield counties, continues south-east 35 miles to the influx from the north of its only large tributary, the Naugatuck. The latter is a fine little stream of 40 miles in length, rising in Litchfield, and entering its recipient in New Haven county. Below its reception of the Naugatuck, the Houssatonic resumes a course of a little W. of S. 10 miles, enters Long Island sound below Stratford, after an entire comparative course of 115 miles.

The very confined, but as it has New Haven harbour for its estuary, the important basin of Wallingford, is naturally connected with that of Houssatonick only from proximity, as, though within 7 miles from New Haven, two chains of mountains separate them from each other. These minor chains rise in the immediate vicinity of New Haven, and the western stretching northwardly, either merges into the Hoosack chain or into the hills of Hamden county, Massachusetts; whilst the eastern, similar to the New England chains generally, ranges a little E. of N. over New Haven and Hartford counties, in Connecticut; and as laid down in our maps, termi-

nates at Westfield river, in Hamden county, Massachusetts. This eastern chain, speaking relatively with the preceding, is, however, though broken in our maps, continuous in nature, and rises near Hadley and Northampton, in Hampshire, and near Greenfield, in Franklin counties, to considerable mountain masses. Leaving Massachusetts, this chain inclines more eastwardly, and leaves Connecticut river, as shall be more particularly noticed in the sequel.

Out of the southern vallies of these two chains, the fountains of Quinipaug or Wallingford are derived, which, after a short course of 30 miles, unite their streams, and opening into a fine bay, of 5 miles, affords a beautiful and convenient port to New Haven. On the roads from Hew Haven to Hartford or Middletown, the traveller will find in the valley of the Wallingford a full compensation for the brevity of its extent. Here is, in a small compass, one of the best cultivated and naturally variegated tracts in the United States. The site of New Haven, an alluvial plain, is quickly followed by all the strong contrasted features of mountain and valley.

There are few, if any other streams of the Atlantic border of the United States, where relative level differs more comparatively with the length of its course than does the volume of the Houssatonick. The table land of Berkshire county, Massachusetts, must exceed 1000 feet elevation above the ocean level. This relative height produces a severity and continuance of winter in the higher valley of the Houssatonick, which is unknown on Hudson river, near Hudson city, or in the vicinity of Boston, though on the same parallel of latitude. That fine mountain valley drained by the sources of the Hoosack and Houssatonick, and occupied by Berkshire county, is amongst the most picturesque and fertile of the Alpine tracts of the United States. In its advance towards its recipient, the Houssatonick flows through

a region much more rugged than that around its sources. Litchfield county, of Connecticut, presents a congeries of mountain ridges, with rich and beautiful intervening vales, and though less broken near its efflux into the sound, the whole basin of this impetuous stream affords an interesting series of strongly contrasted landscapes.

The progress of our survey has now brought us to the long and truly interesting basin of Connecticut. Its remote sources rise at N. lat. 45° 20′, and in long. W. C. 5° 30′ E. Its entrance into the sound is at N. lat. 41° 18′, long. W. C. 4° 40′ E. By actual calculation, its entire course is from its source to efflux, S. 12° 18′ W. 239½ geographical and 276¾ English miles. Measured by steps of 50 miles along its valley, it falls a small fraction short of 300 miles. Above the mouth of the Passampsick, the basin is about 90 by 30 miles, but below the latter confluent widens to about 40 miles, which remains nearly its mean breadth to Long Island sound, 210 miles. From these elements, the Connecticut basin, above Passampsic, has an area of 900 square miles, and below, 8400; having an aggregate superficies of 9300 square miles.

As far as our maps can be depended on, the Connecticut has interlocking sources with the higher branches of Androscoggin, Kennebec, Chaudiere, and St. Francis rivers. Flowing about 50 miles a little W. of S., to Lancaster, in Coos county, New Hampshire, it turns to south-west 25 miles to its passage through one of the Appalachian ridges, receives the Passampsick from the north, and is precipitated over Barnet falls.

Though much smaller and more contracted in its length of course, the Passampsick, rises in and drains the continuation of the great basin of the Connecticut, giving to the larger streams, in a physical point of view, the appearance of a branch. The Passampsick rises in and drains Caledonia county,

Vermont, heading with La Moelle river flowing into Lake Champlain, and with some confluents of Connecticut river, and Lake Memphramagog; general course a little W. of S. 30 miles.

Below the Passampsick, the Connecticut river turns to a little W. of S., which course it maintains about 140 miles, where it is turned to south-east by a mountain ridge, and in the south-western part of Cheshire county, New Hampshire, and the south-eastern of Windham county, Vermont, receives the Ashuelot from the former. Five miles below the influx of the Ashuelot, the Connecticut, having assumed a southern course, enters Massachusetts, and 10 miles farther receives Miller's river from the east. Below the entrance of Miller's river, the Connecticut abruptly bends to the west, five miles to Greenfield, and again assuming a southern course three miles below the latter village receives Deerfield river from the north-west. Though partially inflected by the mountain chain in the vicinity of Northampton and Hadley, the course of Connecticut from Greenfield in Massachusetts, to Middletown in Connecticut, is in a distance of 60 miles nearly due south.

At Middletown this fine stream is once more inflected by a mountain chain, and bends to south-east, in which direction it continues 25 miles to its influx into Long Island sound. The confluents of the Connecticut, though beautiful mountain streams, are comparatively humble as to magnitude or length of course. Of those already named, none exceed 40 miles, and the Chickapee from the north-east, and Westfield from the north-west, entering in the southern part of Massachusetts, each falls short even of that length. Farmington river is the largest and most important branch of Connecticut. The former rises in Hampden county, Massachusetts, flows S. S. E. 15 miles, enters the south-east angle of Litchfield county, Connecticut, and continuing its

primitive course 25 miles, passes one chain of mountains, enters Farmington valley, and is arrested by the Farmington chain at the village of Farmington. Here the stream turns by an acute angle, to a course of a little E. of N., which it pursues 12 miles along the mountain foot, and again abruptly bends to the east, pierces the mountain, and inflecting to south-east, enters Connecticut river below Windsor after a comparative course of 60 miles.

An artificial chain of canal intercommunication has been projected along the Farmington, and in part recently effected.

Below the Farmington, Connecticut receives no tributary worthy notice, and similar to the Hudson its general width is but little influenced by the tides, which flow above Hartford. It is a common mistake to suppose the Hudson to be the only river of the Atlantic slope of the United States, which admits the ocean tides over or into the primitive range. The Hudson is, in reality, the only channel in which the tides actually traverse the primitive, but the Connecticut also receives the ocean swell above Hartford, and of course, over the exterior primitive; as that formation constitutes the solid shores of Long Island sound.

In the map, inserted in Maclure's Geology of the United States, an elliptical section of Old Red Sandstone, is delineated as commencing at the head of New Haven harbour, and lying in a position from S. S. W. by S. to N. N. E. by E., and extending up Connecticut basin to the northern boundary of Massachusetts, and with the primitive granite formation on each side. In this map Connecticut river is made to leave the Red Sandstone, and enter on the primitive by the mountain pass below Middletown. But on a geological map, drawn by the Rev. Edward Hitchcock, and published in Silliman's Journal of Science, which represents the country from New Haven to Bellow's Falls, the intermediate space including the Connecticut river from its mouth to the termi-

nation of the map, the red sand-stone is not even sketched as the prevailing rock. With little apparent regularity we have marked, on the latter map, primitive limestone, primitive greenstone, hornblende-slate, mica-slate, Talcose-slate, chlorite-slate, sienite, argilite, limestone, verd antique, secondary-greenstone, coal formation, and alluvion; and to border this mixture of formations, granite and gneiss.

If the latter map is even an approach towards accuracy, it demonstrates how very little either the chains of mountains or rivers are influenced by that vague system of arrangement called formation. In reality, to an eye at all acquainted with surveying the earth's surface, the delineations on either map must be doubtful. To measure and project with tolerable correctness, the complex formations on the latter noticed map, would demand an expenditure of time, talent, and money, which has never been made to collect such data from any section of the United States. There is a general approach in the Appalachian system of mountains to a regularity of arrangement; but the component materials evince no such definite organization.

In its ordinary features, the Connecticut has considerable resemblance to the Susquehanna. Flowing in a deep and in most places a narrow valley, bordered by mountains or very elevated hills, both rivers present along their margins extended alluvial flats. On the former river the alluvial tracts present some highly interesting traits. This species of soil commences above the mountain pass near Middletown, and opposite that village spreads into a circular plain, limited backwards from the river by the mountain chain of hornblende slate.* Five miles above Middletown the elevated formations reach the river on both banks, but again recede in about three miles, and another immense alluvial plain

* Hitchcock's map.

spreads along both banks, and, with unequal width, stretches upwards of forty miles, varying in width, from Wetherfield and Glastonbury in Connecticut, to South Hadley in Massachusetts. At the latter place the Connecticut river is traversed by the Farmington chain, which approaching the stream in rock masses, interrupts the alluvion for about three miles. Here, if Hitchcock's map is correct, occurs a singular exemplification of the geological structure of Connecticut basin. That geologist traces a series of the secondary greenstone, with a short interruption in Wallingford and Meriden, from the vicinity of New Haven, and as forming the western side of Farmington mountain, carries it over the Connecticut river between South Hadley and East Hampton. The eastern slope of the mountain is, according to Mr. Hitchcock, composed of the coal formation series.

It may be remembered that I have already noticed the very angular bend of Farmington river, in Farmington valley, and from Mr. Hitchcock's map, and no doubt from the real face of nature, the apparent continuation of that stream would have been along the west foot of the mountain into Connecticut river, at the southern base of Mount Tom, carrying Westfield river with it; but from local and not easily traced impediments, both streams pierce the mountain chain, and quit the valley which nature seems to have destined as their course, and enter their recipient, if the expression may be pardoned, by anomalous channels. In fact, if Farmington and Westfield rivers had followed the mountain valley, and joined the Connecticut in East Hampton, they would have, with Manhan river, afforded a truly astonishing resemblance to the real relative courses of the Wallkill, Rendoutkill, and Esopus rivers in New York. I would strongly recommend those who may desire to possess a critical knowledge of the geography of the United States, to compare the minute

features of the two regions I have noticed. A few moments thus applied will be most richly rewarded. Such scrutiny would lead to the discovery, that the alluvial tract on which New Haven has been built, is only (if it is so) interrupted in Woodbridge, to the north of which town it again opens between the two mountain chains of New Haven county, extends along the Farmington, crosses Westfield river, and reaches Connecticut at the mouth of Manhan river in West Hampton. Narrowed and chequered by the Alpine scenery of Northampton and Hadley, the alluvial valley would be found continued up Connecticut river to Greenfield, and what might well excite surprise and interest, would be the fact that its northern termination, similar to its commencement, would be perceived separated by mountain masses from Connecticut river. It would appear evident from comparing the mountain and river vallies, that this great alluvial deposit of 90 miles in length lies in one of the former, and that neither its extent or range has been principally produced by the existing rivers, or at least by rivers flowing at their present level.

We may close this part of our survey by observing, that I might have correctly subdivided the Connecticut basin into sub-basins in the same manner as I had done with that of the Hudson; but though the former basin would admit such subdivision as well as the latter, the lines of separation are not in each case equally obvious, nor in fact is the entire space drained by the Connecticut equally well delineated on our maps, as is that of the Hudson basin. It is true, however, that that part of Connecticut basin from Bellows Falls to the mountain pass below Middletown, has a striking general resemblance to the central sub-basin of the Hudson, except in the single circumstance of extent In both, the ocean tides pass over the primitive into a secondary formation, and in both the mountain and river vallies intersect with an intricacy which demands close and long conti-

nued observation to clearly understand their respective extent and position.

We have seen that the basin of Connecticut is in great part based on primitive rock, and though passing one small ridge of mountains near Middletown, it is nevertheless navigable for vessels drawing ten feet water, to the latter place, above the mountain pass, or 36 miles, following the windings of the stream from Long Island sound. Vessels of seven and a half feet ascend to Hartford, fifteen miles above Middletown. The latter place is at the head of sea navigation, and near the head of the tides; but, though considerably obstructed by falls, rapids, and shoals, the navigation of this river has been so much improved, by dams, locks, and short canals, as to admit boats of considerable tonnage to ascend to, and descend from, Haverhill, Coos county, New Hampshire, and even to and from the Fifteen Mile Falls above Haverhill, upwards of 250 miles, following the particular bends of the river above its mouth. This is very considerably the deepest ascending navigation on the Atlantic slope of the United States east from the Hudson.

Though flowing in a general course without any great inflections, yet by its meanders, it is probable that the Connecticut would exceed four hundred miles.

There remains one more point of comparison between the Hudson and Connecticut basins which ought not to be omitted; that is, the parallelism of the two streams. It is about sixty miles from the mouth of Onion river into Lake Champlain, to Connecticut river at the influx of Passampsick, and following the two great vallies southward 180 miles, the relative distance does not vary more than ten or twelve miles; and the declination of each from the meridian is a small angle to N. E. and S. W. in accordance with the range of the Appalachian system, eastward from the Delaware. Another feature in

the physical geography of this part of the United States deserves notice. If we turn to a map of that part of the Atlantic coast from Buzzard's to Casco bay, with the exception of Capes Cod and Ann, the general range of the coast is nearly the same with that of Hudson and Connecticut rivers, and distant from the latter stream from eighty to one hundred miles.

In respect to climate, the contrasts are strong on Connecticut basin, arising from rapid change of latitude and elevation. Though no part of the Appalachian system either included within or rising contiguous to Connecticut basin, is of great elevation, the general rise of the slope is considerable. The northern part of Coos county, New Hampshire, is, it is probable, more than 1200 feet above Long Island sound. The difference of latitude is within a small fraction of four degrees; and the difference of elevation 1200 feet, equivalent to three degrees, would give an aggregate extreme of temperature of seven degrees, if reduced to ocean level.

The scenery and improvements on this fine basin render it in a high degree worthy attention from the traveller and philosopher. The whole distance from the source to mouth affords a series of landscapes richly contrasted. Though less rugged than the physiognomy of Susquehanna, or perhaps that of the Hudson, there are few of those great objects of nature, river, mountain, cataract, or vallies, of all forms, but of which the Connecticut affords truly elegant specimens. But, whatever may be said of natural scenery, its claims to me were ever only felt in connexion with the productions of human labour, and the endowments of the human mind. I have travelled over a part of the noble region, I am now faintly attempting to delineate, and have realized there, the mingled sensations produced by the splendid form in which nature appears, at once decked in physical and moral ornaments.

We have now passed over that part of the Atlantic slope on which distinct chains of the Appalachian system have been traced on our maps. Beyond the Connecticut basin, the mountains are drawn in groups, but for reasons already given, I am induced to doubt the existence of mountain groups in the United States, and, strictly speaking, I doubt the existence of such a phenomenon on earth. It has been shown, under the general view of the Appalachian system, that in innumerable instances the core of the chains was perpetuated evidently under the earth as well as water, and that what is called a gap, is an elevated notch in the mountain, and that where rivers pass mountain chains, the openings are only gaps depressed below the stream.

Upon these principles, combining the mechanism of the rivers of Rhode Island, Massachusetts, New Hampshire, and Maine, with that of those of Lower Canada and New Brunswick, at the risk of being thought too systematic, I shall endeavour to show the continuation of the Appalachian structure far beyond where the representation of that system is usually terminated. I am, however, compelled to proceed on much less certain grounds than has been trodden over the more south-westerly basins, and defective theory may be substituted in place of facts; but if even an unfounded hypothesis leads to more careful research, and, consequently, to more correct discovery, the temerity of hazarding a predisposing conjecture may be overlooked or pardoned for its ultimate utility.

The eastern part of Connecticut, and a small section of southern Massachusetts and western Rhode Island, are occupied by the two small but important basins of Thames and Paucatuck.

The Thames is formed by two unequal branches, the Quinnebaug and Shetucket. The north-eastern branch of the Quinnebaug rises in Worcester county, Massachusetts, at N. lat. 42° 14′, and long. W. C.

5° 05′ E., and flowing thence nearly due south 16 miles, enters Windham county, Connecticut, within which, 6 miles farther, it reunites with the north-western arm from Hampden county, Massachusetts. Below their junction the united streams flow a little west of south, over Windham and into New London county 30 miles, to the influx of the Shetucket from the north-west. The latter rises nearly on the line between Hampden county, Massachusetts, and Tolland county, Connecticut, and flowing 15 miles to the centre of the latter, turns to south-east 10 miles into Windham county, where it receives a large branch, the Willamantic, from the north, and pursuing the latter course 12 miles farther, enters New London county and joins the Quinnebaug. The river now assuming the name of Thames, flows by a course a little west of south, 20 miles, into Long Island sound, at N. lat. 40° 29′, long. W. C. 4° 55′ E.

The basin of Paucatuck deserves notice only as the stream forms part of the boundary between Connecticut and Rhode Island, and as containing the seaport of Stonington, on a small bay at its mouth, and as forming the utmost northeastern extension of Long Island sound.

As a navigable channel the Thames ranks above the apparent size of the stream or extent drained. The tide ascends to the mouth of the Yantic, at Chelsea landing, the port of Norwich, 15 miles above the mouth. The Yantic, a small branch from the north-west, about 5 miles below the junction of Quinnebaug and Shetucket, gains importance from having the main body of Norwich upon its banks, and from being precipitated over an extensive fall at the head of tide water, between Norwich and Chelsea landing.

Norwich, though a fine and prosperous village, or rather township, does not form, when taken with Chelsea landing, the main seaport on the Thames basin; that rank is due to New London, on the west-

ern or right bank, a little more than 3 miles from Long Island sound. The mouth of the Thames has one defect as a navigable entrance, it is deficient in width; and, therefore, in case of war easily blockaded, and in storms of difficult approach.

The scenery on the Thames, though less bold than along the Connecticut, is yet varied and highly pleasing; particularly towards the head of tide water. In addition to the beautiful swelling environs of New Haven and Fort Griswold, those places afford to the traveller historical recollections at once melancholy and consoling.

With the Paucatuck our survey quits Long Island sound, and leads us into the interesting Narraganset bay. It has been made a question whether either the bay of Naples, the harbours of New York or Constantinople, or indeed any other bay of the world combines more varied or more attractive natural beauties than does the Narraganset. It opens, by three channels, from the Atlantic ocean, between Point Judith, on the west, and Seconet, on the east. Differing in width from 13 miles to less than 200 yards, at Providence, where it terminates. Chequered by Rhode Island, Connanicut, Prudence, and many smaller islands, and by shores rising by gentle acclivities, indented by bays and promontories, the Narraganset extends in a northern direction 30 miles. It is the estuary of Pawtucket, Taunton, and Pautuxet rivers.

The main stream which enters this bay, and mingling with it near its head, may be considered as its continuation, is Pawtucket. This river rises in the mountain tract on each side of Worcester, in Worcester county, Massachusetts, interlocking sources with Chickapee branch of Connecticut, with Nashua and Concord branches of Merrimac, and with the Quinnebaug. The general course of the Pawtucket is to the south-east 35 miles; 20 in Massachusetts and 15 in Rhode Island. It is pre-

cipitated over a ledge of primitive rock and meets the tide about 4 miles to the north-east from Providence, and enters Narraganset bay, in the vicinity and below the harbour of that city.

Taunton river rises, by numerous branches, in Norfolk, Plymouth, and Bristol counties, Massachusetts. Uniting in the latter county between Dighton and Taunton, and assuming the name of the latter, flows by a general course south-west about 25 miles, opens into a small bay, which itself again opens, by two channels formed by the north-east cape of Rhode Island, into the Narraganset. The mouth of Taunton is a little within Massachusetts, but the bay into which it dilates is in Rhode Island, and locally named Bristol bay, from the town of that name near its western outlet. In this stream the tide rises to Dighton, 8 miles above its mouth.

Pautuxet is a small creek of about twenty miles general course, and rising in Providence and Kent counties, Rhode Island, flows easterly into the Narraganset, which it enters 6 miles below the city of Providence, at the flourishing village from which it has taken or to which it has given name.

It is their falls near their common recipient from which is derived to either of the confluents of Narraganset bay, a specific notice in our view; but with those falls the city of Providence has become a focus of immense manufacturing establishments.

Narraganset, as I have already noticed, has three outlets to the ocean, formed by the two islands Connanicut and Rhode Island with the projecting shores of the Continent. The two outer channels are shallow, but the middle entrance between the two islands has sufficient depth of water for vessels of the largest class. Newport, standing on a small bay of Rhode Island, and land-locked by Connanicut, is one of the best harbours on the Atlantic coast of the United States. From Newport to Providence

the channel gradually shallows, and at the latter city only light merchant vessels are admitted.

The basin of Narraganset embraces an inclined plain, the superior verge of which reaches to within 12 miles from the shore of Cape Cod bay and Boston harbour, the heads of Taunton river leaving only a long narrow slip between their fountains and the Atlantic water.

As a commercial entrance, the bay of Narraganset possesses some appropriate advantages. Receiving no large tributary river, the depth of water cannot be affected rapidly by alluvial deposit, a deterioration so common and so ruinous where havens are washed by large rivers. The peculiar local features of Newport harbour protect it also from the oceanic deposits, and give to that place a security of permanent navigable facility, which in the revolutions of physical geography and of relative political importance may be of the utmost consequence to the United States. The time may also arrive when the many natural beauties of Narraganset bay will meet from the traveller and philosopher that attention which they so deservedly claim.

That part of the Atlantic slope included in the great central bay is closed to the north-east by Barnstable peninsula, and by Martha's vineyard and Nantucket islands. Buzzard's and Cape Cod bays approach within 5 miles of each other. The former is a deep triangular indenting, stretching north-east from Narraganset bay, bounded north-west by Bristol and Plymouth counties, and south-east by Elizabeth islands and the south-west projection of Barnstable county. Buzzard's bay is entirely within Massachusetts; it receives no river or creek of consequence, but is very much indented by small bays on both shores, on one of which, at the mouth of Acushnet creek, stands the entrepot of this bay, New Bedford.

From a line drawn from Seconet point to the southwestern of the Elizabeth islands, to its head, Buzzard's bay measures 35 miles, lessening in width from 10 to 1 mile. This is one of the natural channels from which a canal has been projected into Cape Cod bay, in order to complete a part of a chain of inland navigation along the Atlantic coast of the United States; but the shallowness of Buzzard's bay near its head, opposes a great impediment to such an enterprise. Vessels, however, of considerable draught ascend to New Bedford, 16 or 17 miles within the capes of Buzzard's bay.

Including the two islands of Martha's Vineyard and Nantucket, the basin of Buzzard's bay stretches from south-east to north-west, about 60 miles, with a mean width of 25 miles.

CHAPTER VI.

GEOGRAPHICAL VIEW OF THE NORTH-EASTERN SECTION OF THE ATLANTIC SLOPE, FROM BARNSTABLE ISTHMUS TO THE MOUTH OF ST. LAWRENCE.

If an attentive comparison is made between the conformation of the extremes of the central bay of the Atlantic slope of the United States, their strong resemblance becomes apparent. The long westerly sweep of coast, which precedes, and the rapid bend to the northward, with the salient projection of Cape Hatteras, I have noticed. On each direction from Cape Cod, or more accurately Barnstable peninsula, the Atlantic ocean extends with very similar inflexion from the meridian, as we have found from Cape Hatteras. This comparative estimate is not intended merely to include the Capes of Hatteras and Cod, but the general extension of the continent in their vicinity. The capes are simply terms to designate salient points. By reference to a former part of this view, page —, it will be found that the Atlantic coast, from the estuary of the Alatamaha to Cape Hatteras, is noticed as stretching almost exactly parallel to the adjacent part of the Appalachian system; and to the northward of Cape Hatteras, similar to the rivers, the Atlantic is found to bend at nearly right angles to the mountain nucleus. In brief, throughout this survey, we have shewn that the courses of the ocean shores and of the rivers were decidedly influenced by the interior structure of the continent. These remarks are again fully exemplified in Cape Cod and the adjacent ocean borders.

That peninsula usually called Cape Cod, is a point of land stretching from the main continent of Massachusetts, a little north of east, 35 miles, varying in width from 6 to 20 miles. Extending along about N. lat. 41° 40′ to long. W. C. 7° 08′ E. Turning at very nearly a right angle, this peninsula again extends about 30 miles, with a mean width of from two to three miles. In all its curve of 65 miles, from its union with the continent at Sandwich, to its final termination by Cape Cod, the peninsula very gradually lessens in width. The superficies of this tract is generally sand, with a level surface, but the relative position, and geographic bearing of its parts, support the opinion, that the base is a section of that great whole so deeply marked on the Atlantic slope of the United States.

In the progress of our survey from Cape Florida, we have followed the Appalachian system in its immense stretch from south-west to north-east; we have traced it to where, in the basins of the Hudson and Delaware, it curves to the north, and we are now to find that system inclining to the west of north. Passing Barnstable peninsula, and entering on an examination of the great north-eastern bay of the United States, and of the adjacent continent, a change of relative bearing of the coast and rivers is at once perceptible. Although not so delineated on our maps, I must risk the conjecture that the ranges of mountain chains, north-east from the basin of Connecticut, lie inclining from the meridians by a small angle to the west of north, and east of south, or else they reassume their original position south-west from Pennsylvania. The courses of the rivers, including that of the St. Lawrence, sustain such hypothesis. But the subject will be better illustrated in the sequel.

Enclosed by the curve of Barnstable peninsula, the extension of Cape Ann, and the intervening coast of Massachusetts, spreads a gulf or bay in the

form of a parallelogram of 55 miles in length, from S. S. E. to N. N. W., and 25 miles in width. Taken in its utmost extent, this sheet of water has been appropriately called the bay of Massachusetts, and in its indentings, besides others of less note, has the fine harbours of Plymouth, Boston, and Salem. From Cape Cod to Cape Ann, it is open 44 miles to the Atlantic. It is not a little curious to observe how greatly the minute points along the coast of Massachusetts bay develope the physical structure of that part of the earth. Plymouth Point, and Gurnet Point, which form Plymouth Harbour; Point Alderton and Point Shirley, which form the extremes of Boston bay; and Great Nahant beach, extend with a mutual parallelism, which approaches the regularity of artificial arrangement; and what enhances the interest of such phenomena, is the circumstance, that this parallelism is in accordance with the longitudinal extension of Massachusetts bay itself, and is either with, or very nearly at right angles to the courses of the rivers. We may justly conclude that the northern arm of Barnstable peninsula, and Gurnet, Plymouth, Alderton, Shirley, and Nahant points are formed by sand or giest resting upon rocks in *situ*, and that these rocks form minor parts of that vast system of physical arrangement, of which the Appalachian mass is the mighty nucleus.

From the structure of the interior country, Massachusetts bay receives no river of thirty miles comparative course, and but one, Charles river, which derives its sources above twelve miles inland. A narrow inclined plain curves round the bay from Cape Cod to Cape Ann, 150 miles, and differing in width from half a mile to 15 miles, though the mean width does not exceed, if it amounts to 8 miles; area 1200 square miles.

From some cause, or perhaps from a combination of causes, Barnstable peninsula forms a remarkable

point of change in the elevation of the Atlantic tides. Proceeding south-west from that peninsula, the tides become more and more moderate, until within Cuba straits the ocean swell does not exceed a mean of three feet; but, on the contrary, north-east from Cape Cod, or more correctly, from the southern part of Massachusetts bay, a sudden and excessive augmentation takes place. In Buzzard's bay the tide does not at a mean exceed four and a half feet, whilst at a distance of 7 miles, over Sandwich neck, the swell amounts to 17 or 18 feet, and goes on increasing north-eastwardly along the shores of North-east bay, until, in its utmost extension, the Bay of Fundy, the ocean pours upon the coast with the enormous weight of from 50 to 60 feet. These very high tides produce effects which give to the natural history of this bay of the Atlantic, peculiar features. Without a knowledge of this circumstance in the motion and quantity of the tides, it would excite astonishment or incredulity, to be informed that the harbours of Plymouth, Boston, Salem, Newburyport, Portsmouth, Portland, and still more, the harbours farther north-east, were less obstructed with ice in winter, than even the port of New York. But the difficulty is at once solved by an attention to the natural effects of the ebb and flow of such accumulated masses of water, and particularly in the ebb, which bears with irresistible impetuosity into the ocean, the fragments of ice formed by the previous flow.

The obvious consequence of the preceding phenomena is, that the Atlantic is more and longer navigable, upon an equal descent of coast, to the north-east, than to the south-west of Barnstable peninsula; but from the much more rapid acclivity of the continent in the former, than in the latter section of the United States, the advantage of superior elevation of tide water is fully, if not more than compensated. We have seen already that in Chesapeake bay,

Delaware bay, and Hudson, and in particular the latter channel, the tides, though of moderate height, penetrate deeply into the continent; but north-east from Barnstable peninsula, there is no tide channel of 60 miles depth from the open ocean.

I have seen no satisfactory explanation of the cause of the great extremes of tide elevation on the Atlantic coast of the United States and New Brunswick, and would ask if the phenomenon is not explicable from the physical features of the Gulf Stream? In the notice of that ocean river in the first chapter of this *View*, it has been, I hope, demonstrated, that its height above the contiguous ocean, and the intensity of its current, must decrease from the Bahama channel to about N. lat. 50°; and we may now lay down as a postulate that in proportion as the Gulf Stream depresses in height, and moderates in rapidity of flow, the oceanic swell would meet with decreasing impediment in its westerly course towards the American coast; and consequently the result, excessive tides to the north-east. The projection of Barnstable peninsula, which operates as an immense dike, serves as a demarcation, and in part produces the sudden revolution in the tide level which we have noticed. But to return to our subject.

So very rapid is the acclivity around Massachusetts bay, that, with the increase of 9 or 10 feet to the tides, the ocean swell is every where arrested within three or four miles from the coast, except in the case of Charles river, in which the tide flows to Dedham. Here I may again repeat the observation made when treating on Narraganset bay, that the harbours of Massachusetts bay possess a similar advantage in an exemption from alluvial deposit.

The importance of a bay having on its shores Plymouth, Boston, and Salem, with numerous other harbours of less note, will warrant some amplification in this place. Being detached as we have seen

from the interior country by the rapid inclination of its shores, the inhabitants on Massachusetts bay, have long since turned their attention to the formation of artificial channels, one of which, the Middlesex canal, has been effected, though very imperfectly constructed. This canal, 27 miles long, leaves the Merrimac river above its lower falls, and terminates at Charlestown, opposite Boston. The water in the canal is 30 feet wide at the surface, 20 at the bottom, and three feet deep. Concord river crosses the line of the canal on the summit-level, 22 miles from Charlestown, and five from the junction of the canal with the Merrimac, and thus more than an ample supply of water is afforded for lockage in both directions. From Boston harbour to the summit-level, is 104 feet, and from thence to the Merrimac is a descent of 32 feet. The entire rise and fall is 136 feet, and serves to illustrate the inflections of surface. In a direct line, it is only 16 miles from Boston harbour to the summit-level, rising 104 feet, or at a mean of 6½ feet per mile. If we suppose, as we may do reasonably, that the tides in the harbour of Boston, and in the mouth of the Merrimac, are level with each other, we then find that the Merrimac channel rises 104 less 32 or 74 feet in the intermediate space from the Atlantic ocean to Chelmsford, in a distance, following the stream, of about 35, but in a direct line only 26 miles.

This, called the Middlesex canal, from the county through which it has been formed, is of so much utility, and has been so very imperfectly executed, that in the advance of improvement, it is probable it will be entirely re-constructed. It is rapidly becoming a maxim in canal and road architecture, *to undertake neither, until their practicability and benefits are made manifest; but when once undertaken, to be only formed from and based on permanent materials.*

Middlesex canal opens to Boston, the commerce

of the Merrimac basin, the position and extent of which will soon be shown.

Canals have been projected to unite Massachusetts bay and Buzzard's bay, and surveys and levels taken from Back river of the latter, and Scussett's river of the former; distance found, 7 miles, and summit level 40 feet above low water mark, in Buzzard's bay. Tide in Massachusetts bay, 18, and in Buzzard's, $3\frac{1}{2}$ feet.

Another survey was made from Barnstable, in Massachusetts, to Hyannus harbour, and here similar obstacles were discovered as had been found between Buzzard's bay and Scussett's river. Hyannus, like the head of Buzzard's bay, is incommoded with shoals, and has only a tide of 4 feet. In Barnstable bay the tides are 16 feet. Summit level, 80 feet above low tide.

Another and more interior route has engaged the attention of the legislature of Massachusetts, and that is, to unite Weymouth landing, in Boston harbour, with Taunton river, which we have already described as entering into Narraganset bay. Two routes have been examined, and one found 26, the other $23\frac{1}{4}$ miles. Intermediate summit level 133 feet, but by digging 10 feet for the space of one mile, may be reduced to 123. The facility of obtaining a sufficient supply of water on the summit level has not yet been very satisfactorily determined. If practicable, a single glance on a map of the United States will exhibit the immense addition such a canal would be to the internal navigation of the United States.

Passing Cape Ann, the coast again curves into a deep bay, which at its greatest sweep receives Merrimac river at Newburyport.

The Merrimac is formed by the Merrimac proper, and the Nashua, and Concord rivers. The Merrimac rises in the highest mountain nucleus of the United States, north-east from the Hudson, and

interlocking sources with the Amanoosuck branch of Connecticut, and those of Saco. The general course of the Merrimac, from its source to its junction with the outlet of Winnepisseogee lake, from the north-east, is very nearly due south, 50 miles. It thence inclines to S. S. E. 12 miles, and receives from the south-west the Contocook. Continuing the latter course about 40 miles, it is augmented by the Nashua from S. S. W. Below the mouth of Nashua the Merrimac, in a distance of 12 miles, gradually curves to the east, and falls over a ledge of rocks below Chelmsford. At the foot of the Chelmsford falls, the Concord enters from the S. S. W., and the Merrimac turns to N. E. 30 miles, to the Atlantic ocean.

The difference of level in the extremes of this basin, independent of the peaks of the White Mountains of New Hampshire, 7300 feet, is very considerable. With it commences that admixture of lake and mountain scenery, so characteristic of the north-eastern section of the United States. The lake physiognomy, however, is not confined to that section alone; but, on the contrary, is an elongation into Maine and New Hampshire of that great feature which is perceived on leaving the basin of Mississippi to arrive on that of St. Lawrence. Over all the continents of both Americas, from the extreme south at Cape Horn, lakes, in the real meaning of the term, are rare, and when found, comparatively small, until the basin of the Mississippi is passed. That vast assemblage of fresh water reservoirs, which separate the United States from Canada, is only a bold frontispiece to an enormous volume, which spreads over the residue of North America, as far as known towards the northern pole. It may be observed, that if we commence a traverse of the Appalachian system at its south-western extremity, we find no existing lakes, but advancing northwards, these minor basins appear on a very small scale in

the Susquehanna basin, and accumulate in number, proceeding over the Hudson and Connecticut basins, but still continue diminutive. But with the Merrimac we meet, in Winnepisseogee, a sheet of water of 25 miles in length and from one to ten miles wide, and not remaining solitary, but followed in rapid succession by others of various dimensions. Indeed no known river of the continent, beyond the Merrimac, is without lakes as a part of its physical features.

As a commercial or navigable basin, the importance of the Merrimac has been much enhanced by the Middlesex canal, and other improvements made on the river itself. According to the estimates made by Mr. Sullivan, the lands within six miles from the canal, have risen one third in price; while land in the country generally retains its former value. In the state of New Hampshire, through which the Merrimac flows, timber is now worth from one to three dollars per ton standing; before the canal was made it was worth nothing; so that in the article of timber alone, that state is supposed to have been benefitted to the amount of 5,000,000 of dollars. The good land there has risen in price since the opening of the canal, from $2 to $6, $8, or $10 per acre.

If this statement is correct, it is a most valuable commentary on canal making; but the Merrimac has been improved by other works. The tide rises only to Haverhill, 18 miles. I have shewn that the surface of the river above the Chelmsford falls is 74 feet above tide water. In order to pass the falls, a canal of three locks descends 34 feet. It does not meet the tide, but though the stream is still rapid, it is navigable, and following the minute bends, falls 45 feet, and reaches the tide at Haverhill.

Above Chelmsford the Merrimac has been made navigable to Concord. The first great improvement made in the stream below the latter place is the Bow canal, constructed in 1812. Hooksett ca-

nal, 6 miles still lower, in a fall of 17 feet, passes another difficult fall or rapid. Amoskeag canal, 8 miles below that of Hooksett, affords the second most extensive body of work of a similar nature in New England. In 9 miles below Amoskeag canal, are 6 more of smaller extent, round as many falls or rapids. Cromwell's falls, also made navigable by a canal, is 14 miles below Amoskeag, and still lower is the Wicasse falls, around which is also a canal, the last above that of Middlesex.

Taken comparatively, more of labour and money have been expended on the Merrimac than upon any other river of the United States.

The small basin of Piscataqua, enclosed in the land-side by those of Merrimac and Saco, gains celebrity by containing near its efflux the fine haven of Portsmouth, in New Hampshire. This singularly constructed basin is nearly in form of a parallelogram, 40 by 25 miles, area 1000 square miles. Salmon Fall river from the N. N. W., and Conchecho from the N. W., unite about 10 miles northwest from Portsmouth, turn south, and flowing in that direction 5 miles, receives the outlet of an interior lake called Great Bay. This latter sheet of water is the estuary of Lamprey's and Exeter rivers, and extending from north to south, eight or ten miles, leaves a peninsula between it and the Atlantic ocean on which Portsmouth stands, and on the south side of the haven formed by the discharge of the waters of the basin. The name of Piscataqua has been frequently applied to Salmon Fall river, but is more correctly restricted to the tide water channel, below the mouth of Conchecho river, and particularly below the discharge of Great Bay.

As a navigable basin, except near its mouth, the Piscataqua is unimportant. The acclivity of the country is so rapid that the tides are arrested at a short distance inland. Portsmouth harbour itself is, however, perhaps the best haven on the Atlantic

coast of the United States; and the very high tides prevent accumulation of ice, and leave this harbour open throughout all seasons.

The basin of Saco follows that of Piscataqua, if we include in the former the small river Kennebunk. Saco is a real mountain stream, and draws its extreme sources from the summits and vallies of the White Mountains. Augmented by these Alpine snows, the Saco flows south-east 20 miles, receives Swift river from the west, and turns to north-east 18 miles. Hence the stream again suddenly bends to S. S. E., which course is maintained 50 miles to its efflux into the Atlantic ocean. So very rapid is the rise of the land, that though the tides at its mouth exceed 20 feet, they are arrested at Biddeford, 7 miles above the ocean.

Kennebunk, on the small river Kennebunk, is the principal entrepot of the basin, and is a port of considerable consequence.

Rising from a mountain chain at an elevation of 7300 feet, Saco basin, though not attaining, yet approaches the region of perpetual snow, and if we estimate 400 feet as an equivalent to a degree of latitude, the actual difference in the basin itself, added to the allowance for relative height, would yield an extreme of temperature equal to 20 degrees of latitude.

If we multiply the square root of the height of any given mountain in feet, by 1.2247, the quotient is the distance in miles from which it can be seen upon the surface of the sphere. From this formula, White Mountain, allowing its elevation to be 7300 feet, can be seen at a distance of 104½ miles; and consequently renders its summit visible on the Atlantic ocean from the outlet of Merrimac to Penobscot bay, and at a distance of 35 miles from the shore opposite the mouth of Saco. This is the only part of the Atlantic ocean from which the distinct ridges or chains of the Appalachian system can be seen.

The basin of Presumscot or Casco follows that of Saco. The former, though inferior in extent, is nevertheless, in a navigable point of view, of superior consequence to the latter. The higher source of Presumscot, Crooked river, rises in the spurs of the White Mountains, and near the Amariscoggin. Flowing thence south-east 30 miles falls into a large lake called Sebago pond, about 10 miles square. From the eastern side of Sebago pond the stream again issues and is known as Presumscot river, which by a curve to the southward, but by a general course of south-east 20 miles, falls into Casco bay, opposite Portland in Maine.

Casco bay is a noble sheet of water stretching from S. W. to N. E. 20 miles, with a mean width of 5 miles, land-locked by a chain of islands, and having at the south-west extremity the important harbour of Portland; but, here again the rapid acclivity of the shores arrests the tides at a few miles from the Atlantic.

The small basin of Casco is succeeded by the comparatively great basin of Kennebeck. With the outlet of the latter the direction and character of the Atlantic coast again change. Hitherto, from Florida Point we have found the coast, though much indented by bays and chequered by islands, yet, if contrasted with that part of the survey which we now commence, tolerably uniform. But from Casco to Passamaquoddy bay, long projecting peninsular points, islands of all shapes and bearing, with deep intervening bays, render the coast of Maine one of the most intricate on earth; and if not opened by excessive tides, one of the most unnavigable in winter.

The regular physical structure of the Atlantic coast of the United States receives another illustration in the coast from Casco to the head of the Bay of Fundy. It has been shewn from actual calculation that the intervening coast of the United States,

between Savannah river and Cape Hatteras, was N. 56° 30′ E., and *vice versa* in its bearing. Long Island we found lying in a direction N. 69° 44′ E., which is very nearly that of the entire coast from the mouth of the Hudson to the outer projection of Barnstable peninsula. By similar means we find that Portland in N. lat. 43° 38′, long. W. C. 6° 42′ E., and Quoddy Point in N. lat. 44° 44′, and long. W. C. 10° E., bear from each other N. 65° 05′ E., distant 181½ English miles. The latter course if continued north-eastward will follow the Bay of Fundy to the head of Chignecto channel, and is very near parallel to the outer coast of Nova Scotia and the island of Cape Breton.

Thus it appears that where the Atlantic coast of North America, from Florida to St. Lawrence bay, inflects to the N. E. and S. W., the angles of inflection approximate towards regularity or rather uniformity of construction, which certainly evinces, if it does not demonstrate, a general and widely extended system, which, if admitted to exist, presupposes an adequate cause.

With these preliminary remarks we proceed to survey the basins of Maine eastward from that of Presumscot. Kennebec basin is bounded south by the Atlantic ocean, south-west by the basins of Presumscot and Saco, west by that of Connecticut, north-west by that of the Chaudiere, and north and east by that of Penobscot. The Kennebec basin lies in a general direction from north to south, extending from N. lat. 43° 40′ to 45° 46′, and in long. from 5° 45′ to 7° 50′ E. from W. C.

The Kennebec river is formed by two great branches; the Androscoggin and Kennebec proper. The former is the south-western branch, and rising in the same ridge with the Connecticut, at about N. lat. 45° 12′, flows by numerous branches 20 or 25 miles southwardly into a congeries of lakes, out of the westernmost of which, the Umbagog, the

united waters now a large stream, issues in a western direction. Turning quickly to the south, and pursuing that course 30 miles, distant from 15 to 25 miles from Connecticut, and by the name of Amariscoggin, reaches the northern base of the main nucleus of the White Mountains. Again curving at nearly right angles, pierces the mountain chain and flows nearly due east 50 miles, where it once more bends at right angles and assumes a southern course, which is continued 30 miles to N. lat. 44°, below which, by a gradual curve of 20 miles, first south-east, thence east, and finally north-east, it unites with Kennebec above Bath, after an entire comparative course of 135 miles. Below the mountains this stream is known as the Androscoggin, and though it receives no large tributary branches, is augmented by numerous creeks, and is, for its length, a very large river, a remark, however, which may be made and applied to all the rivers of Maine.

The principal stream of the basin, the Kennebec, rises opposite the sources of the Chaudiere, and south from those of the Penobscot, and formed by an intricacy of lakes and creeks flows to the east 40 miles, and falls into Moosehead lake. This sheet of water stretching 30 miles from north to south, with a breadth from 5 to 20 miles, discharges Kennebec river from its south-western side. Flowing S. S. W. about 20 miles it receives Dead river, a considerable branch from the west, and turning to a southern course about 40 miles, bends thence 5 miles to Norridgewock. Below the latter place, the Kennebec curves to the north-east 10 miles, and thence S. S. E. 20 miles to the influx from the north-east of the Sebasticook river, and slowly assuming a course of a little W. of S. 35 miles, joins the Androscoggin after an entire comparative course of 180 miles.

The Kennebec, below the union of its two great branches, is rather a complex bay than a river. Be-

low Bath, the long narrow peninsula of Phippsburg reaches about 20 miles due south, and forms the western boundary of Kennebec bay. Eastward from that peninsula spread numerous islands and interlocking channels, which indent the coast upwards of 40 miles to Penobscot bay. In this place, the principal entrances are Sheepscut river, Damariscotta river, and St. George's river.

As a navigable basin the Kennebec is of great importance; the tide ascends Kennebec proper to Augusta 40 miles, and up the Androscoggin to near Durham, about 35 miles from the open ocean. Though both branches are obstructed by falls and shoals, they afford considerable facility to inland navigation; the principal article of down stream transportation is lumber.

Penobscot basin follows that of Kennebec, and opens to the Atlantic ocean by a wide bay 30 miles in depth. The Penobscot basin has that of Kennebec west, St. John's north, and St. Croix or Passamaquoddy east.

Geographically, Penobscot extends from the Fox islands, at the mouth of Penobscot bay, at N. lat. 43° 53′, to the extreme northern source of Penobscot river at N. lat. 46° 12′, and in long. from 6° 36′ to 9° 10′ E. of W. C. In form it has a rude resemblance to a tree, the root towards the ocean and top-spreading inland, general direction about north and south, with a large protruding branch to the north-west.

Penobscot is formed by two unequal branches, Penobscot proper, and Piscataquis. The remote north-western sources of the Penobscot reach to within 60 miles from the St. Lawrence, immediately below Quebec, and have interlocking sources with the St. John's, Kennebec, and Chaudiere. Similar to the other streams of that region, the Penobscot is formed by a congeries of lakes, and interlocking creeks, which flow by a general course

of S. E. 40 miles into Chesuncook lake, a sheet of water, about 15 by 5 miles. Issuing again from the south-east angle of Chesuncook lake, the Penobscot continues S. E. 45 miles, to the influx of Watawankeag river from the N. E. Below their junction the united waters turn to S. S. W. 25 miles, to the influx from the west of the Piscataquis.

The latter stream, though the principal confluent of the Penobscot, is comparatively small, having a general course not exceeding 45 miles. The Piscataquis is, however, for its brief length, a large stream, having sources spread around the east side of Moose Head lake, and extending from north to south upwards of 40 miles.

Now a spacious and wide river, the Penobscot continues its course to the Atlantic ocean a little W. of S. Thirty miles below the Piscataquis the tide is met at Bangor, and gradually widening 30 miles farther opens into an expansive bay between Castine and Belfast. Chequered and decorated with numerous islands and peninsular points, Penobscot bay finally terminates between St. George's Point and the Fox Islands. The bay and river included, the Penobscot has a course of 215 miles.

Though less extensive than the united basins of the Androscoggin and Kennebec, the Penobscot basin is more navigable; the tide rises to Bangor, 60 miles within the outer capes of the bay, nor do shoals occur immediately above the termination of the tide; a circumstance in which the Penobscot is singular amongst the great streams of the Atlantic slope of the United States. Navigation remains uninterrupted by any obstruction except the current 20 miles above Bangor, and is used for an immense lumber transportation far above the Piscataquis.

The northern sections of both the Kennebec and Penobscot basins remain uncultivated wilds; but settlements are slowly extending into those entangled

regions, and as usual in the United States, projected improvements follow discovery, and precede settlement. Upper Penobscot river, above Chesuncook lake, flows past, and within two miles from, the northern extremity of Moose Head lake. Here a canal has been proposed, which with the actual settlement of the country by a dense population will be carried into effect, and unite the Kennebec and Penobscot near their sources.

From Penobscot bay to that of Passamaquoddy, in a distance of 100 miles along the margin of the ocean, a number of small rivers form bays of more or less depth and width, the principal of which are Union river, Narraguagus river, Pleasant river, Chandler's river, Machias river, and East river.

Union river terminates in Blue Hill bay, and rising at N. lat. 45°, flows a little west of south, almost exactly parallel to the Penobscot, at from 10 to 15 miles distance. Including Union river and Blue Hill bay, the whole course is about 70 miles.

With the considerable island Mount Desert intervening, Blue Hill bay is followed to the north-east 18 miles by a much wider, and deeper opening, Frenchman's bay. No river or even large creek enters the head of the latter, which is also the case with two smaller indentings still farther eastward, Goldsboro' and Dyer's bays.

Narraguagas and Pleasant rivers flow into one vast estuary, the western extension of which is called Pidgeon Hill bay, and receives the Narraguagas; and the eastern, into which is poured Pleasant river, bears the same name with its confluent. The Narraguagas and Pleasant rivers are still more humble than Union river, neither of the former having sources 40 miles inland.

Chandler's river and its estuary Englishman's bay, between Pleasant and Machias bays, are unimportant in a general sketch.

Geographically, this small maritime slope, con-

taining the minor basins I have noticed, lies between N. lat. 44° and 45°, and between Long. W.C. 8° 20′, and 10° E. Length along the Atlantic ocean about 90 miles, with a mean width about 30, area 2700 square miles. As a navigable section it is remarkable for the number and convenience of its harbours, and its very varied and picturesque scenery; but it is, of all parts of the coast of Maine of equal extent on the ocean, that in which the tides penetrate the least distance inland.

Machias bay and its confluents deserve particular notice, as the last deep indenting of the Atlantic coast of the United States, advancing from south-west to north-east, and which are entirely within its territory. Into this basin is discharged the two Machias rivers, East Machias and West Machias. On the former stand the two maritime villages of the same name, 15 miles north from the main ocean. West Machias heads about 40 miles north-west from Machias, and interlocks with Union river, and consequently both overspread the smaller intermediate streams.

North-east from Machias bay, occurs a phenomenon on the coast of Maine, a distance of 21 miles without an opening worthy notice. This uniform shore is the outer margin of a peninsula, formed by an arm of Machias bay, and Cubscook bay, opening from the western side of Passamaquoddy bay. Quoddy head is the eastern projection of this peninsula, which would seem to demand from its position a distinctive name.

We have now reached the north-eastern limit of the United States, and merge into Passamaquoddy bay. This expanse of water gains intense interest as forming a definite boundary to the United States on the Atlantic ocean. As an object in physical geography, this bay is only a curved indenting of the greater bay of Fundy. Before, therefore, we notice the former, a general view must be given of the latter.

The peninsula of Nova Scotia is united to the continent by a long narrow isthmus. This neck is bounded on one side by the southern extension of the bay or gulf of St. Lawrence, and on the other by two triangular protrusions of the bay of Fundy. The peninsula rises like an island, and stretching from S. W. to N. E. about 300 miles, with a mean breadth of 60. Between the south-western part of Nova-Scotia and the continent, an interval of about 55 miles width, and 150 in depth, is occupied by the bay of Fundy. Its opening into the Atlantic ocean is narrowed by Manan island, lying six miles outside Quoddy point, and by a long and narrow strip of land, stretching from and nearly parallel to the opposite coast of Nova Scotia. At the north-east extremity, Fundy bay is again subdivided into two smaller bays, Chignecto and Mines. The particular bay of Passamaquoddy is, as has been observed, only a mere extension of the bay of Fundy at the outlet of St. Croix or Schoodic river.

At Quoddy point the coast turns to N.N W. and pursuing that direction 20 miles to the outlet of St. Croix. In a northerly course from Quoddy point, leaving a narrow intermediate strait between them and the continent, stretch two islands, Campo Bello and Deer Island. The latter, reaching nearly to contact with a point of New Brunswick, leaves Passamaquoddy bay nearly land locked. To assist the memory, it may be noticed, that N. lat. 45°, and long. W. C. 10°, E. intersect immediately outside of Deer Island, and 9 miles due east from the mouth of St. Croix.

Schoodic or St. Croix river is formed by two branches; the St. Croix proper, and Schoodic. St. Croix rises at N. lat. 45° 50′, long. W. C. 9° 10′ E. The sources are, however, rather a congeries of lakes than any definite stream, which curve from south to east 40 miles by the name of Grand Lake. From this inundated tract issues a stream flowing

south 25 miles, and there unites with the outlet of another series of lakes, called the Schoodic lakes. Inclining a little E. of S., the St. Croix continues its course 15 miles, below its junction with Schoodic. Here between the United States village of Milltown and the British village of St. Stephens, this river bends abruptly to the N. E. 7 miles; thence curving, first east 5 miles, and finally to the S. E. 7 or 8 miles, is lost in Passamaquoddy bay, after a comparative course of 100 miles.

The Schoodic or western branch of the St. Croix, is the drain of an inundated or swampy tract, between Penobscot and St. Croix, above N. lat. 45°, and 9° E.

This great expanse of surface we have been surveying, extends over almost as much of the habitable earth as does Great Britain in Europe, andFrance taken together, and extending from N. lat. 28° 15′ to 46° 12′, stretches through nearly 18 degrees of latitude. Approaching at the southern extremity so near the tropic of Cancer, the facility of vegetable production seems without assignable limit. Beside an indefinite number of smaller and less important openings, we have found about thirty entrances of great extent and depth.

When reviewing the political subdivisions, we shall have a farther opportunity to develope its future capabilities whilst describing its actual condition. In this place, in order to complete a physical view of this part of the continent of North America, I shall continue the survey to St. Lawrence gulf, and close this section of our view by an examination of the great basin of St. Lawrence.

Sixty miles a little N. of E. from the mouth of St. Croix, the great river St. Johns enters the northern side of the bay of Fundy. Geographically, the basin of St. Johns extends from N. lat. 45° 15′ to N. lat. 48°, and in long. from 6° 40′ to 11° 40′ E. Lying in a position from N. W. to S. E., this basin is in

form of a parallelogram, 240 miles long, and about 80 mean width; area 19,200 square miles. Independent of any artificial improvement the St. Johns is one of the most navigable of the Atlantic rivers, being much less impeded by rapids, shoals, or falls, than any other stream intervening between it and the Hudson. It is formed by two main branches; the St. Johns has its extreme fountains in the N. W. part of Maine, interlocking sources with those of the Penobscot, and Chaudiere, at N. lat. 46° 10′, long. 6° 40′ E. Flowing thence N. E. about 100 miles nearly parallel to, and about 40 miles distant from, St. Lawrence river, curves to the east and receives from the south a large branch, the Alaguash. Assuming a course of N. E. by E. of 40 miles, in which distance, 6 miles below the Alaguash, the main stream is augmented by the St. François from the north, and at the termination of this course by the still more considerable confluent, also from the north, the Matawaska.

The St. François rises between Maine and Lower Canada, about 15 miles from the St. Lawrence, between Nare and Green islands, at N. lat. 47° 45′, and flowing thence, about 40 miles comparative course, falls into St. Johns.

The Mattawaska is a stream deserving particular notice, as at and near its mouth extends, along St. Johns, the settlement of the same name, now a subject of negociation between the United States and Great Britain. See the map of that section of Maine.

The Mattawaska, the northern branch of St. Johns, drains the extreme northern angle of Maine, and consequently, of the United States part of the Atlantic slope. The remote sources of this stream rise within 20 miles from the main volume of St. Lawrence, or about 30 due south from the mouth of Rimousky river, at N. lat. 48°. Flowing S. E. about 80 miles, the Mattawaska joins the St. Johns. Below their junction, the united streams flow S.S.E.

40 miles, and inflect to a little E. of S. at N. lat. 47° and pursue the latter course 80 miles. From some distance above the junction of St. Johns and Mattawaska, the main volume flows at a small distance from the eastern verge of its basin; the Ristigouche, Nipisigic, and Miramichi, all rise near the St. Johns, and flow north-eastwardly into the gulf of St. Lawrence.

The only confluent of St. Johns below the Mattawaska which deserves particular notice, is the imperfectly known Aroostook. Interlocking sources with the Penobscot, the Aroostook follows the inflections of the St. Johns, flows first 50 miles a little E. of N., and thence about an equal distance N.-E. by E., and unites with its recipient at 46° 44′ N.

If a line is drawn along the earth's surface from the Saco river, where that stream traverses the White Mountain chain, and extended thence north-east, it will pass over a series of bends in the Androscoggin, Kennebec, Penobscot and St. Johns, which when viewed on a map appear as if constructed from a given model, and afford conclusive evidence of a uniform structure in that section of the continent, and exhibit another instance, in the absence of mountain representation, of the defects of our maps.

We have traced the St. Johns to its great curve, where in perfect accordance with the Saco, Androscoggin, Kennebec, and Penobscot, it inflects to the north-east, which course it maintains 25 miles, and again turns to nearly east 50 miles. It is now a tide water river of great width and volume, and again bending assumes nearly a southern course of 50 miles, and is lost in the bay of Fundy, after an entire comparative course of 380 miles.

As a navigable channel, the St. Johns is much superior to any other stream of the United States north-east from the Hudson. The excessive high tides, and projecting rocks near its mouth, render it diffi-

cult of entrance except between the ebb and flow. The tides rise within its channel upwards of 80 miles. The mouth between St. Johns and Castleton, is narrow, and has only 17 feet water at low tides. Over this bar the incumbent mass of waters, above fifty feet, rush with prodigious velocity and eddying violence, particularly at the flow, when the ocean swell encounters the current of the river; but within all is safety.

Differing near three degrees of latitude, and perhaps one thousand feet in elevation, the temperature of the air over this basin must present extremes equivalent to five or six degrees, and when compared with the climate of the middle states of the United States, that of St. Johns must be severe in winter. The soil has been described as greatly more fertile than found in the basins of New England generally. All concurrent testimony represent this basin as of great importance in an agricultural and commercial point of view, but in reality the greater part of its surface remains a wilderness imperfectly known.

The peninsula of Nova Scotia with the island of Cape Breton, forms the north-eastern extremity of the Atlantic slope of North America. Cape Breton, following the general direction of Nova Scotia, and only separated by a very narrow channel, may be correctly united in a general view, and so estimated, presents a body of land stretching from N. W. to S. E. about 300 with a mean width of 70; area 21,000 square miles. Of this extent it is probable Nova Scotia contains three-fourths. The inclination of the peninsula, like every other part of the Atlantic slope, is towards the Atlantic ocean. The rivers, brief as to length of course, rise near the western side and flow south-eastward into the Atlantic. To this general arrangement, St. Mary's river offers a singular exception. This stream rises near the southern s de of the bay of Mines, and flows parallel to the bay of

Fundy, leaving a long narrow intervening strip from one to ten miles wide, and enters the Atlantic ocean at the S. W. angle of Nova Scotia.

Cape Breton is formed by two comparatively long peninsular points, which, extending northward and north-eastward, leave a wide intermediate bay. The convex side of the island approaches to within one mile from the north-east extremity of Nova Scotia.

The interior features of both the island and peninsula are rugged and broken, and the latter, along the Atlantic very much indented by boldly rising points and deep bays.

In delineating the features and extent of the bay of Fundy, an incidental notice was taken of the isthmus which connected Nova Scotia to New Brunswick. This irregular neck of land has the head of Fundy Bay to the S. W. and the straits of Prince Edward N. E. From the head of Mines bay to the mouth of Retcoudiac river, it is about 90 miles in length, with a mean breadth from 25 to 30. The peninsula and isthmus, with the islands of Cape Breton and Prince Edward, form the province of Nova Scotia. The island of Prince Edward stretches along the southern part of the gulf of St. Lawrence 90 miles, with a mean width of 25; area, 2250 square miles. Taken together the four natural sections of Nova Scotia contain an aggregate area of 25,500 square miles.

Between the basin of St. Johns and the gulf of St. Lawrence, and between the head of the bay of Fundy and the basin of St. Lawrence, extends a triangular slope, the rivers of which are discharged into the gulf of St. Lawrence. This slope, forming the eastern part of the province of New Brunswick, stretches from N. lat. 45° 40′ to N. lat. 48° 30′, and in long. W. C. 9° to 12° 30′ E. Length 220; mean breadth, 50; area, 11,000 square miles.

The eastern shores of New Brunswick, beside minor indentings, are broken by two deep gulfs, Mi-

ramichi and Chaleur bays. Into the former is discharged Miramichi river, a stream of 90 miles in length, rising interlocking sources with Shicaticoke branch of St. John, and flowing N. E. by E. enters the head of Miramichi bay, at N. lat. 47° 10′.

Into the much more extensive opening of Chaleur bay, is discharged Ristigouche river. This stream is formed by two branches, the Ristigouche proper and the Matapediac; the former heading near the confluence of St. Johns and the Matawaska, and the latter in a lake south from the Paps of Matane on the St. Lawrence. The two branches unite near the head of Chaleur bay, and form the north-eastern river of the Atlantic slope of North America, S. W. from the St. Lawrence.

CHAPTER VII.

GEOGRAPHICAL VIEW OF ST. LAWRENCE BASIN.

If we regard the inclination of the plane and its recipient, the St. Lawrence is one of the rivers of the Atlantic slope, differing from those already described, only in extent of surface drained; but the peculiar features of the St. Lawrence basin and the immense superficies comprised within its limits, justly entitle it to the rank of a system. Regarding this fine section of the earth therefore as a whole, we commence to review in detail the separate parts.

This great basin is naturally subdivided into three unequal parts, which may be with propriety designated upper, lower, and middle.

The higher basin, the bottom of which is occupied by Lake Superior, lies in form of a rhumb; its position north-east and south-west 300 miles, and breadth from south-east to north-west nearly equal. Area about 90,000 square miles, one third of which is contained in Lake Superior. Into this reservoir are poured upwards of fifty rivers, none of which are of much importance, except St. Louis and the *Riviere au Grand Portage*. St. Louis falls into the extreme south-western angle of Lake Superior, and is the channel of intercommunication with upper Mississippi.

Riviere au Grand Portage, enters the north-west side of Lake Superior, and by its channel the route to the northern regions of North America leaves the Canadian sea.

Though individually small, the quantity of water supplied collectively by the numerous confluents of Lake Superior must be very great, and differs ma-

terially in different seasons of the year. The whole mass, composing a large river, is precipitated through the straits and down the falls of St. Mary's. The surface of the lake is by measurement 641 feet above the Atlantic level. How much the surrounding inclined plain rises, it is difficult to determine in the present imperfect state of geographical knowledge respecting those regions. Mr. Schoolcraft estimates the rise of St. Louis river at 551 feet, and independent of particular elevation, it is probable that no great error will be superinduced by estimating the outer margin of Lake Superior basin, at 600 feet above the level of the lake itself.

The cataract or fall of St. Mary is 15 miles from the lake, at N. lat. 46° 31′. The river above and below the main chute has a considerable descent, and the entire fall from Lake Superior to Huron is 23 feet. The whole strait is, however, with some difficulty navigable for canoes and boats. Sail vessels of 6 feet draught ascend to the foot of the falls. Those of larger size are compelled to be stopped at Sugar island. Below the cataract the strait widens, and is divided into two channels by St. George's island. It is supposed that one or both channels might be very easily deepened so as to admit, to the fall of St. Mary, any vessel which could navigate Lake Huron.

In 1820, a cession of the soil 4 miles square was obtained by the United States from the Chippeway Indians; and, on the 17th July, 1822, a command of three hundred troops, under Col. Brady, made the commencement of a military establishment at this place.

With the slight depression of 23 feet, as I have stated, the second or middle sub basin of St. Lawrence is spread below that of Lake Superior. The middle basin extends over a quadrangular area of at least 160,000 square miles, having the three great central lakes of Michigan, Huron, and Erie as its lower vallies.

Lakes Huron and Michigan, united by a wide and short strait, lie very nearly on a general level, 618 feet above the Atlantic ocean. This must, nevertheless, be understood as applying to the lake level generally, as Michigan having a constant current towards Huron, must vary in level at its extremes, but the difference is inconsiderable.

Lake Michigan is an immense chasm, at least 900 feet deep and 270 miles long, by about 50 mean width. The confluents of both this and Huron, like those of Superior, are inconsiderable in particular, but very numerous, and when swelled by spring rains and melted snows exert a sensible influence on the relative height of their recipients.

The inclination of the planes on either side of Lake Michigan, remains undetermined to any exactness, but from the brief length of its rivers, and from the flat aspect of the country from which their sources are derived, we are warranted in considering their fall as moderate. These observations will apply with much propriety to the peninsula of Michigan, between Lakes Erie, Michigan, and Huron.

Lake Huron is an expanded triangular body of water, second in mass and extent to Lake Superior. Receiving the vast discharge of both Superior and Michigan, into its north-western angle, Huron protrudes the accumulated waters from its southern extremity. A few detached islands lie scattered over the surface of Lake Superior, and a few of still more diminutive size chequer the northern part of Michigan; but Huron is almost subdivided by a regular chain. A peninsula is projected into this lake from its south-east side, and from which, in a direction S. W. by W., and nearly parallel to the northern side of the lake, the Manatoulin islands follow entirely across the lake to about midway between the mouths of Michilimakinak and St. Mary's straits. Between the Manatoulin group or chain

and the northern shore of the lake, extends a strait of about 200 miles in length, and with a mean width of about 30 miles, also much chequered with islands. The residue of Huron, towards the Michigan coast, sinks to an almost unfathomable depth; 900 or 1000 feet would be a moderate estimate.

The prodigious depth of the three upper Canadian lakes is a very interesting phenomenon in physical geography. Though the surface of the two lowest of the three, Michigan and Huron, is 618 feet elevated above the Atlantic surface, their bottoms are nearly, if not altogether, 300 feet below the ocean tides.

The surface of the Caspian has been determined by actual admeasurement to be 321 feet below that of the Black sea; but the Caspian is shallow, and its bottom, therefore, not greatly depressed below its surface. It is therefore probable that some parts of lakes Michigan or Huron are the deepest chasms on the continental surface of the earth. This is one of the principal causes of the high transparency of their waters, a circumstance in their natural history, which has excited the admiration of travellers ever since civilized man has traversed their bosoms.

The margin of Lake Superior in most places presents a broken, rugged, and often precipitous aspect; but descending the straits of St. Mary the harsh or bold features of the scenery soften, and in many places the shores of Huron and Michigan rise gently from the water edge; and even where rock bound, the elevations have seldom the appalling front which renders the navigation of Lake Superior so dangerous, alarming, and yet alluring to the scientific voyager.

Both depression of surface, and advance to the south, have powerful and permanent effects on the seasons. Travellers and writers are not unfrequently deceived, however, when speaking of the climate

of Canada; they overlook the immense extent of that country, and seem to regard as a spot a region sweeping over ten degrees of latitude. Canada has been extolled for the mildness and dreaded for the severity of its winters, and both the admiration and dread were just. What great similarity of temperature can be expected at Quebec, above N. lat. 47°, and at Amherstsburg situated near 5° more southwardly? But this subject will be more appropriately noticed under the head of climate.

Lake Erie basin constitutes the most southern section of the middle sub-basin of St. Lawrence. This shelf, if I may use the term, is elevated 565½ feet above the Atlantic surface, and consequently lies 52½ feet below the level of Michigan and Huron. The stationary distances in which this depression is made are exhibited in the following table.

No. XII.—*Table of the stationary distances from Lake Huron to Lake Erie.*

	Miles.	
From Fort Gratiot, at the outlet of St. Clair river, to the mouth of the river Delude, from the United States' shore - -		3
Upper end of Isle au Cerfe - - -	5	8
Lower do. do. - - - -	2	10
Mouth of Pine river - - - -	4	14
Mouth of Belle Riviere - - - -	8	22
Outlet of Chenal Ecarte - - - -	4	26
Outlet of Warpole channel - - -	2	28
Outlet of the Eagle channel - - -	3	31
Mouth of St. Clair river into Lake St. Clair	4	35
Mouth of Huron river, from U. S. shore -	7	42
Head of Detroit river - - - -	19	61
City of DETROIT - - - - -	7	68
Sandwich in Canada - - - -	$1\frac{1}{2}$	69
River Rouge, United States' shore - -	2	71
Upper end of Grand Turkey island - -	1	72
Mouth of the Rivier Ecorce - - -	3	75
Upper end of Gros Isle, United States' shore	2	77
Lower end of Grand Turkey island - -	2	79
Riviere aux Canards - - -	1	80
Amherstsburg or Malden, Canada - -	$3\frac{1}{2}$	$83\frac{1}{2}$
Upper end of Bois Blanc - - -	$\frac{1}{4}$	$83\frac{3}{4}$
Lower ends of Bois Blanc and Gros Isles -	$1\frac{1}{4}$	85
Opposite Brown's creek, U. S. shore -	1	86
Lower extremity of Celeron island - -	1	87
Mouth of Huron river, U. S. shore, and - Lake Erie - - - - - -	2	89

A fall of $52\frac{1}{2}$ feet in 89 miles, demands 58 hundredths to each mile. But though thus depressed below the higher part of the basin, Lake Erie is as remarkable for its comparative shallowness, as are Superior, Huron, and Michigan, for their great depth. With the confluents of Erie, the basin of St. Law-

rence has attained its utmost southern latitude, and now assumes its great north-eastern course, with a conformity to the bearing of the opposing Atlantic coast which could never have arisen from accident.

Lake Erie is 230 miles long from S. W. to N. E. The form elliptical but much elongated, the breadth but little exceeding 50 at the widest, and not averaging more than 35 miles. The bottom of Lake Erie appears to be composed of an alluvial deposit of sand and mud, resting on an immense secondary schistose sandstone. Depth seldom exceeding 200 feet, and in few places so much. The great depth indeed of the upper lakes seems to terminate at the outlet of Huron. Assuming the name of St. Clair's river, the vast discharge of Huron issues by a rapid current of 35 miles, but moderately deep, to Lake St. Clair. The latter is a circular sheet of water of about 20 miles diameter, and very shallow, admitting only vessels of moderate size. Issuing again from the south-west angle of Lake St. Clair, the now enormous body of water rolls down a wide strait of 28 miles, called by an admixture of French and English *Detroit river*. This term as it stands is really very appropriate, as the stream between St. Clair and Erie lakes does in fact partake of the two characters of strait and river, and may be with great propriety designated the *Strait river*. Critically speaking, however, the straits of St. Mary's, Michilimakinak, St. Clair, Detroit, Niagara, and the whole St. Lawrence, below Lake Ontario, are all straits, differing only in length and quantity of water.

Detroit river, like St. Clair, is generally shallow, and only admits vessels of 7 or 8 feet draught. Compared with its great extent of coast, and the numerous streams poured into the western and south-western shores of Erie, that lake is a very unnavigable sheet of water; no one of its rivers, except Detroit, admitting vessels of 8 feet draught.

As a minor basin, the particular valley of Erie

exhibits peculiar features. If we turn to a map of that part of the St. Lawrence basin, we behold a long triangular peninsula, protruded from the country north from Lake Ontario, and extending south-west, having Lakes Huron and St. Clair, with their connecting strait and Detroit river north-west, and Lakes Ontario and Erie with Niagara river south-east. The salient point of this peninsula is that part of Upper Canada opposite the city of Detroit, and upon it, about 120 miles north-east from that city, a river rises, which flowing south-west enters Lake St. Clair, under the name of Thames. The course of this stream is very nearly parallel to Lake Erie, leaving an intermediate strip of land, upwards of 100 miles in length, and about 30 wide. The position of the Thames valley is therefore such, that more than two-thirds of the northern shore of Erie receives no stream amounting to the size of a large creek, and in the same distance offers no opening worthy the name of a harbour. The northern shores are indeed, in all their extent, low and sandy, rising slowly from the margin of the lake.

A small river, the Ouse, or Wellard, enters the north-east part of lake Erie, between Norfolk and Lincoln counties; and in a commercial point of view it is now becoming of great consequence.*

Turning our attention to the south-east shore of lake Erie, at the head of Niagara river, we perceive a slope extending about 30 miles inland, and down which flow a few large creeks, the principal of which are Buffaloe and Cataraugus; but, advancing south-west up the lake beyond the valley of the latter creek, we are presented with an interesting phenomenon. The sources of the Ohio valley rise within five miles from the lake shore. Continuing south-west, this very narrow inclined plain widens slowly for a distance of 230 miles to the sources of Maumee

* See Canals.

river, where it reaches 100 miles inland. The length of the rivers correspond to the width of the plain down which they flow, and Conneaut, Grand river, Cuyahoga, Rock river, Black river, Vermillion, Huron, Sandusky, and Maumee, are, with the exceptions of Cuyahoga, nearly in the proportions of length to the graduations of a regular scale.

With the western curve of Erie, the inclined plain which supplies its rivers curves also, and is continued to the northward, forming south-eastern Michigan, and beside many lesser streams, discharges the rivers Raisin and Huron into this lake.*

The elevation of the summit level in the state of Ohio, which constitutes the southern protrusion of St. Lawrence basin, is about four hundred feet above lake Erie, or in round numbers, nearly one thousand above the Atlantic tides. This must, however, be understood as the mean elevation, as the Ohio ridge rises gradually from south-west to north-east, and in north-western Pennsylvania, and south-western New York, is at least 1400 feet above the Atlantic level.

The rivers of Erie are, without exception, obstructed with bars at their mouths, affording, as I have said before, in no one instance, 8 feet water. A small group of islands, called the Bass islands, and situated near the south-western curve of this lake, has in one of the central islands a harbour, Put-in-Bay, with 12 feet water, which is the most easy of

* Here occurs a remarkable instance of the great confusion of our geographical nomenclature. There is a Huron river rising in central Michigan, and which falls into lake St. Clair. A second Huron heads with the first, and flowing south-east enters lake Erie, at the western side of the mouth of Detroit river; and a third Huron rises in Crawford and Richland counties, Ohio, and crossing Huron county, falls into lake Erie. Is not this heaping difficulty on confusion?

LAKE ONTARIO
FALLS of NIAGARA
AND ADJACENT COUNTRY
Miles
1 2 3 4 5 6 7 8 9 10
Fort Niagara
Young's T.
Niagara
Fort George
Port Dalhousie
Canal
Queenston
Niagara
Strait
Ridge Road - To Rochester
Tuscarora Indians
Lewistown
Lockport
St. Davids
8th. Oct. 1812
Brock's Monument
Devil's Hole
Lundy's Lane
Whirlpool
Table
Beaver Dams
Manchester
Schlosser
Forsyth's
Falls of Niagara
Brown's
Burning Spring
Goat I.
Navy I.
Chippeway
5th. July 1814
Pendleton
Erie Canal
Tonnewanta C.
NEW YORK
20 Mile Cr.
UPPER
Welland or Chippeway R.
GRAND ISd.
Ararat
Tonnewanta
Welland
Canal
CANADA
Waterloo
Fort Erie
Erie Canal
To Batavia
Black Rock
BUFFALO
Buffalo Cr.
Port Maitland
Sugarloaf
Grand R.
Pt. Industry
Pt. Abino
LAKE ERIE

access and deepest of its havens. The rivers of Ohio and Michigan, and which flow into Erie, are also, beside the bars at their mouths, obstructed by falls and rapids. May not—or rather will not the time speedily arrive, when a line of canal will encircle the United States shore of Erie? But this subject will meet a due notice under the heads of New York, Pennsylvania, and Ohio. We resume our survey.

A constant, and when calm, a very perceptible current sets down Erie, and with the prevalence of north-western and south-western winds, renders the up-lake navigation tedious, if not dangerous; forces the enormous volume of water into Niagara strait, and finally down that stupendous cataract, which forms one of the most attractive wonders of nature.

We may relieve the tedium of a more intrinsically useful, but a less seductive description, by a particular notice of the Falls of Niagara. I have visited this scene of elementary strife, and suppose my feelings nearly those which every mind must, more or less, indulge as it is approached. My first visit was near sun-set, of a fine calm evening, July 29th. Slowly, I heard the deep, long, and awful roar of the cataract. My mind, which for years had dwelt with anticipation upon this greatest of the world's traits, approached the scene with fearful solicitude; I beheld the permanent objects, the trees and the rocks; and I beheld also the passing clouds that momentarily flitted over the most interesting picture that nature ever painted, and exposed to the admiration of intelligent beings. But as darkness closed I retired, determined to return to the scene of real delight and behold its beauties amid the beams of a rising sun. But I could not for a moment abstract my mind from the object I had dimly seen, and in fancy conceived the beauties, the horrors, and the wonders, the coming morning would produce.

That morning came; it was clear and serene. I

hasted to the brow of the precipice. I expected much, and was not disappointed. The splendours of the scene burst at once on my view. The noise of the falling mass of waters is heard more and more distinct as the observer advances.

I approached it from the New York shore, from which it is so obliquely seen as to destroy its best effects; but defective as was this my first distinct view of Niagara, the perspective displayed beauties infinitely transcending any I had ever before seen. The beams of morning glanced upon the curling volumes that rose from the abyss beneath. My eye sought the bottom of this awful gulf, and found in its bosom, darkness, gloom and indescribable tumult. My reflections dwelt upon this never ending conflict, this eternal march of the elements, and my very soul shrunk back upon itself. The shelving rock upon which I stood, I felt actually trembling under my feet, and the irresistible flood before me seemed to present the pictured image of evanescence. The rock was yielding piece-meal to ruin, fragment after fragment were borne into the terrible chasm beneath; and the very stream which hurried these broken morsels to destruction, was itself a monument of changing power.

With some reluctance I retraced my steps to my lodgings, but soon after returned, and descending the almost perpendicular bank of rocks, found myself under that tremendous FALL OF WATER, which even in mere defective description has excited, and ever must excite, the admiration of cultivated man. I crossed Niagara strait about 250 yards below the *chute*. The river was ruffled by the conflict it had sustained above, but no real danger threatened the passenger. Perpendicular and rudely broken walls of rock rise on both banks, far above the fall, and raise their frowning precipices to the appalling height of between two and three hundred feet. The trees which fringe the upper selvedge of

these mural banks, appear, when seen from below, like shrubs. I was completely drenched by the spray of the cataract; but the sublime picture spread before my eyes was too impressive to admit reflection upon a momentary inconvenience.

The river below the falls flows with considerable rapidity, but with less velocity and turbulence than I had anticipated. The opposing banks are strikingly similar; both being perpendicular, perhaps half the descent, and towards the base slopes extend, composed of the fragments which have been torn from their original position above.

Most maps of Niagara are very defective; they represent the river above and below the falls as continuing very nearly the same course. This is so far from being the fact that the bend immediately at the ledge over which the water is precipitated forms an acute angle, the salient point projecting into Canada. The river above the falls, bears a little E. of N., and below turns to N. E., which course it continues about a mile, and thence inflects to a northern direction, which, with some partial curves, is preserved to lake Ontario.

Between the lower extremity of Grand Isle and the mouth of Chippewa, the Niagara river is upwards of a mile wide, but contracts rapidly as the inclination of the plane augments. As high as the mouth of Chippewa river, the banks are not greatly elevated above the water level, but apparently rise, advancing towards the *chute*. This change of relative height is only a deception in vision, occasioned by the wear of the bed of the river. The general level of the country is preserved to Queenstown heights.

Many contend that the best point of view is from Goat Island. Of this I am unable to speak from experience, but judging from relative position, am inclined to think that the table rock affords by far the most favourable view, combining the advantages of

a profile and front perspective. The table rock I did not visit. The rapids above the main fall, are, however, little less worthy of attention than the fall itself, and can certainly be seen to much advantage from Goat Island.

The rapids, particularly on the Canada side, afford a scene of sublimity and grandeur; tumbling over ledges of rock, many of which are 8 or 10 feet perpendicular descent. These ledges are indeed productive of a series of cataracts, over which the irresistible volume rolls its terrific mass towards the still more awful scene below. Though more confined in width and quantity of water, the New York channel has also its appropriate beauties and attractions to the traveller. Many small islands clothed with stunted cedars, stand between the main shore and Goat Island, round which the foaming surge dashes with endless rage. One of these islets hangs upon the brow of the falls, and produces a small middle sheet of ten or fifteen yards wide, rising in mimic majesty between the two gigantic torrents on each side.

No adequate idea can be formed from description of this wonder of interior North America. Its pitch in feet,* its width, velocity, and consequent mass, can be determined with a near approach to accuracy; but the effect as a work of nature can only be produced from actual view. If the massy walls of rock, and the rapids above, are excepted, there is no other object near Niagara, that is striking in the scenery. It is left alone in simple and sublime dignity to impress upon the soul a sense of majestic grandeur, which loss of life or intellect can alone

* If the following notice is correct, the pitch or direct fall of Niagara has hitherto been over-rated. "The perpendicular height of Niagara Falls has been ascertained by accurate measurement, to be 158 feet 4 inches."—*Philadelphia Sat. Eve. Post*, Sept. 29th, 1827.

obliterate, and the force of which no language can convey. If towering mountains and craggy rocks surrounded Niagara, I cannot believe but that much of its fine effect would be lost. As it is, it is an image whose whole contour is at once seen, and the view unbroken by extraneous objects. Even sound is subservient to the impression made upon the heart; none is heard, except the eternal roar of the cataract. I would have been rejoiced to have seen this place in a tempest. The whole time I was there, the weather though warm was clear, serene, and pleasant. Amid the howling of the black northwest wind, Niagara must have something of more than common interest. I am strongly inclined to believe that winter alone can give to the falls all its most appropriate attendant imagery. But, at all times, at all seasons, (and might I not say, by all minds?) will this matchless picture be viewed with wonder and delight, and remembered with feelings of pleasure.

A few days after my return to the city of New York, from Niagara, I met with and read the 4th Canto of Childe Harold. It is a description of the cataract of Vellino. Words of fire! made use of to paint an object, in itself no doubt worthy the mighty genius of the greatest modern poet; but an object, compared to which, Niagara is as a towering mountain beside a rose shrub. If Lord Byron had given intellectual existence to this grand effort of a master mind, under the very spray, in view of the emerald verge, and with his soul aroused to heaven by the sound of the waters of Niagara, his imagery would not have more vividly pourtrayed this scene, whose parts a poet alone can describe.

"The roar of waters!—from the headlong height,
Velino cleaves the wave-worn precipice;
The fall of waters! rapid as the light,
The flashing mass foams shaking the abyss;

The hell of waters! where they howl and hiss,
And boil in endless torture; while the sweat
Of their great agony, wrung out from this
Their Phlegethon, curls round their rocks of jet,
That gird the gulf around, in pitiless horror set,

And mounts in spray the skies, and thence again
Returns in an unceasing shower, which round
With its unemptied cloud of gentle rain,
Is an eternal April to the ground,
Making it all one Emerald:—how profound
The gulf! and how the giant element
From rock to rock leaps with delirious bound,
Crushing the cliffs, which downwards worn and rent,
With his fierce footsteps, yield in chasms a fearful vent

To the broad column, which rolls on and shows
More like the fountain of an infant sea
Torn from the womb of mountains by the throes
Of a NEW WORLD, than only thus to be
Parent of rivers which flow gushingly
With many windings through the vale:—Look back!
Lo! where it comes like an eternity
As if to sweep down all things in its track,
Charming the eye with dread,—a matchless cataract.

Horribly beautiful! but on the verge
From side to side, beneath the glittering morn,
An IRIS sits, amidst the infernal surge,
Like HOPE upon a death bed, and unworn
Its steady dies, while all around is torn
By the distracted waters, bears serene
Its brilliant hues with all their beams unshorn,
Resembling, 'mid the torture of the scene,
Love watching madness with unalterable mien."*

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* This description of the cataract of Niagara, and quotation from the Childe Harold, were inserted in Darby's Tour from New York to Detroit, and published 1819.

Only with this description, can be compared that of Charybdis by Homer: it cannot be presumption to say it has no other equal in literature. Let any person of warm fancy read those lines in view of Niagara, on a fine summer morning, and whilst the Iris beams upon his eye, he will exclaim, "This is indeed the language of wrapt poetry."

The natural beauties around Niagara are not confined to the Falls and Rapids. From the heights above Queenstown, a prospect opens only second to the Falls themselves, though very distinct in character.

The wide sweeping alluvial plain of lake Ontario lies beneath, chequered with meadows and farms; the deep and impetuous strait issuing in its dark profound from the shelving rocks above the two towns of Lewistown and Queenstown; and far on the back ground, the ocean-like expanse of lake Ontario closes the perspective.

It is when standing on the brow of these heights, that the fact becomes demonstrative, that here once dashed Niagara, mingling his foaming surge with the waves of Ontario. The rocky bed has yielded to the ever-rolling waters, and the cataract has retired to the deep and distant dell, where it now repeats the thunders of ages, and continues its slow but certain march to Erie. Time was when Niagara did not exist, and time will come when it will cease to be! But to these mighty revolutions, the change of empire is, as the bursting bubble on the rippling pool, to the overwhelming volume that crushes the cliff of Niagara itself. Since this cataract fell where Queenstown now stands, have risen and fallen, Assyria and Babylon; Persia and Macedonia; Carthage and Rome. The flood of northern barbarians issued forth from their native wilds, and in the storm of savage fury, profaned the tombs of the Fabii and the Scipios; and in the march of time, the polished sons of these mail-clad warriors, now

seek, with religious veneration, the fragments of the statues which their forefathers broke; and whilst this moral stream was flowing through the wide expanse of ages, has the Niagara continued its unceasing course. Roused from the slumber of a thousand years, the energies of the human mind sought another world, and reached America; and amid this new creation found Niagara. During the change of nations, religion, and language, this vast, this fearful cataract unceasingly pursued and pursues its slow and toilsome way.

The vicinity of Niagara has in some measure become classic ground. The events of the last war between Great Britain and the United States, have been rendered remarkable by some of these events which continue land-marks in history. The incipient grandeur of our navy, and the glorious termination of the contest, were events beyond rational hope. But on no other part of the theatre of this war, were the operations of the respective armies more sanguinary, nor the contest between rival battalions so obstinate as on the Niagara river. Perhaps to the numbers engaged, no battles were ever more obstinately contended, or victory more dearly bought, than were those of Queenstown, October 8th, 1814, in which Gen. Brock was killed; that of Chippewa, July 5th, 1814, and that of Bridgewater. There is no other scene, however, which the traveller visits which so little answers his anticipations as that of a field of battle. In the splendid accounts of fine positions chosen, defended, or lost; the movements of armies, their shock, their victory, or their rout, we are apt to expect something uncommon in the scenery where such events happened, and as exciting high interest on review; but when seen, this illusion vanishes, and the eye finds only the common objects in nature to render conspicuous the theatre of the greatest battles.

But we now resume our geographical review of the St. Lawrence basin. The ridge, or more correctly slope down which Niagara is precipitated, commences in Upper Canada, towards Lake Huron, and is by some supposed to be the same ledge which is continued in the Manatoulin Islands. Extending south-eastward, it reaches and crosses Niagara river, enters the United States, and inflects to the eastward, forming the lower terrace of the middle sub-basin of St. Lawrence. By actual measurement, the surface of Lake Ontario is depressed below that of Erie, 334 feet.

Ontario is itself the higher reservoir of the lower sub-basin of St. Lawrence; and passing from Erie basin to that of Ontario, a very marked change in the natural physiognomy of the country is perceptible. The confluents of Erie possess very little of the lake character, but the contrary is the case with those of Ontario, Genessee river excepted. The following table will, however, exhibit in a condensed view the relative height of the two sub-basins.

No XIII.—*Table of the relative heights of the Lakes Superior, Huron, Michigan, Erie, Ontario, &c.*

	FEET.
Superior	641
Huron and Michigan	600
Erie	565
Ontario	231
Crooked Lake in Yates and Steuben counties, New York	700
Canandaigua Lake	680
Aqueduct at Rochester	499
Seneca Lake, at Geneva	440
Rome level	420
Seneca river, at Montezuma	371
Cayuga Lake	400
Lake Champlain	90½

Before proceeding, however, to examine the more minute features, it may be necessary to sketch the outline of the lower sub-basin of St. Lawrence. This widely extended section of the continent of North America is composed of two very unequal inclined planes. That of the right, or south-east, about 750 miles in length, does not exceed a mean width of 60 miles; but that of the north-west extends over 900 miles in length, with a mean width of 270 nearly, with an area of 287,000 square miles.

It is a circumstance of singular interest, that the course of St. Lawrence from its efflux from Lake Ontario, to its real mouth above the island of Anticosti, is almost parallel to the general bearing of the opposite coast of the Atlantic ocean; and if the entire space from the north-west sources of the lower sub-basin of St. Lawrence, to the Atlantic coast, is engrasped in one sweep of vision, the channel of that great river or strait, will form a line of very nearly equal division.

The preceding data may serve to give the reader an idea of the immense extent of the St. Lawrence basin, and of the territory included in the Canadas. A very intelligent gentleman of Canada told me, in that country, that there was land within its limits sufficient for twenty millions of inhabitants. He might have very safely doubled the estimate.

Surveyed physically, and commencing with Niagara river, we have found a sudden depression of 333 feet in 25 direct miles, from Lake Erie to Ontario. Following the southern shores of the latter upwards of 70 miles, we find only small creeks, but at length arrive at the influx of a stream of some magnitude. This is the Genessee, rising on the table land of northern Pennsylvania, at N. lat. 41° 52′, at an elevation of at least 1200 feet, and flowing with a general bend westward, but inflecting again to the E. of N., having an entire course of 100 miles, and falling into Lake Ontario in nearly the long. of its

sources, 0° 50′ W. The sources of the Genessee are on the extreme southern part of the basin of Ontario.

With the north-western sources of Susquehanna intervening, the valley of Genessee is followed by another of singular structure, that of Seneca, Onondaga, Oswego, or Oneida. As I have a choice, I shall use the most ancient and most common appellation Oneida.

The Oneida river is formed by two branches, that of the Oneida proper to the south-east, and the Seneca south-west. Both these branches have gained intense interest from the route of the Erie canal passing over their respective vallies.

Oneida proper has its most remote source in Lewis county, New York, at 43° 40′, in Fish creek, between the sources of Salmon and Black rivers. Flowing a little W. of S 35 miles, Fish creek receives Wood creek from the east. The latter rises on the summit level between the Mohawk and Oneida vallies, near Rome, in Oneida county. It is by the flat intervening plain between these two streams, and at an elevation 420 feet above the Atlantic ocean, that the Erie canal leaves the basin of the Hudson, and enters that of St. Lawrence.

Immediately below their junction, Wood and Fish creek are merged in Oneida lake, a sheet of water 20 miles in length, and with a mean width of 4 miles. Into Oneida lake, beside the united waters of Wood and Fish creeks, are poured from the south-east, Oneida creek, and the united waters of Chittinengo and Canasarago creeks, with some of little note from the north.

From the western angle of Oneida lake, its waters are again discharged in a river of the same name, which flowing by a very circuitous channel of 16 miles, but in a direct distance west of about 8, unites with the Seneca.

The valley of the Seneca is peculiar in physical geography. If we recur to the notice already given of the position of the terrace which produces the Niagara Falls, and trace its range eastward, we shall find it following the general course of Lake Ontario, and we shall find it producing the falls of Genessee, at Rochester, and again rising and winding eastward between the small creeks flowing into Lake Ontario, and the valley of Seneca, for about 60 miles, until again broken by the Oneida river. Within this ridge of hills, is enclosed a valley, or minor basin, presenting peculiar features. East from Genessee river, about N. lat. 42° 45′, a chain of lakes commences which individually range like radii, having the interior of Lake Ontario as their their centre. Canesus, Hemlock, Scancatica, Honeoye, Canandaigua, Crooked, Seneca, and Cayuga lakes, lie longitudinally from north to south nearly, but preserving a position approaching closely to right angle from the southern shore of Lake Ontario; those west of Seneca lake have a slight declination from the meridian to N. E. and S. W.; but with Seneca, this declination is reversed, and increases in Cayuga, Owasco, Skeneatelas, Ottisco, Onondaga, and Oneida, the latter extending W. of N. W.

The relative elevation of the parts of Seneca valley is shewn in table 13, page 217. The summit levelbetween the head of Seneca lake, and the Chemung branch of Susquehanna, at Newtown, is given in table 5, at 885 feet; and in table 13, we find Crooked lake elevated above the Atlantic ocean 700, and Canandaigua lake, 685 feet. Consequently, the higher lakes of the Seneca valley are depressed only about 200 feet below the summit level between the two great basins of St. Lawrence and Susquehanna. The lakes of Seneca valley, depress rapidly, advancing to the N. E. down the stream; in so much that Cayuga level is 300 feet below that of Crooked lake, in a distance of 25 miles. Montezuma on the outlet

of Seneca and Cayuga united, and on Erie canal, lies 329 feet below Crooked lake, and 140 above the surface of Lake Ontario. Crooked lake is elevated above Ontario 469 feet, though distant at the nearest points of approach only about 42 miles.

From the preceding elements, it is demonstrated, that the Oneida basin, from Crooked lake to the mouth of Oneida river, has a descent of 469 feet, and from the general level of the north-east part of Steuben county, of more than 900, perhaps 1000 feet. All the lakes which chequer the Seneca valley lie in deep chasms; the adjacent and intervening country rising steeply and to considerable elevation.

It may again be noticed as illustrating the peculiar features of this region, that the Rome level is only 189 feet above the level of Ontario. I have not learned the relative height of Oneida lake, but as it lies below the summit at Rome, it does not, it is probable, rise 100 feet above the surface of Ontario.

When treating on the topography of New York, the preceding data will be again noticed; but I cannot in this place dismiss the subject without some passing remarks.

The climate along the shores of Erie and Ontario presents some phenomena which are very anomalous, unless due regard is had to the relative height of the adjacent country. In their entire length, from the mouth of Detroit river to Sackett's harbour, Lakes Erie and Ontario are bordered by an alluvial plain of more or less width, and differing slightly in elevation above the surface of the respective lakes. From this extended alluvial line, the country rises in the state of Ohio, to 400 or 500 feet; in Pennsylvania and New York, to perhaps 800 feet above Erie, and in its prolongation eastward to 1000 or 1200 feet above Ontario.

To any person who has paid attention to the theory of atmospheric temperature, it will be at once evident, that along the whole southern side of St.

Lawrence basin, from the sources of Maumee, in Ohio, to those of Black river and the Mohawk, in New York, through 500 miles, the increase or decrease of temperature is inverse to the latitude. In vulgar estimation, the superior mildness of the winters along the lake shores, over that of the same season, 30 or 40 miles inland to the southward, is accounted for from the agency of water, but the great difference of level, equivalent to more than two degrees of latitude, is unknown or overlooked. Indeed there is no other phenomenon in physical geography, more capable of deceiving the most practised observer, than is the difference of level. Baron Humboldt remarks his astonishment, on finding, by a barometrical operation, that Lima was between 500 and 600 feet above Calao its port, though only six miles asunder, and apparently nearly on the same level. I have several times traversed the ground 16 miles between Geneva and Canandaigua, and would never, certainly, have suspected, from the aspect of the country, that the two lakes on which these two villages are situated, differed 240 feet in level. See table 13.

I shall have another occasion also, to notice a fact which may seem at the first blush incredible; that is, that the city of Pittsburg is situated 235 feet above Lake Erie, though the sources of Alleghany river, one of the constituents of Ohio, at that city, rise within four miles from the margin of the lake. It is the accurate regard to such features, however, which makes the difference between the mere *traveller* and real *observer*.

On its northern side, Ontario receives but one inlet worthy of notice, the river Trent, entering near the head of St. Lawrence. This river, or rather chain of lakes, originates in the interior of Upper Canada, in an intricate series of shallow lakes; the general slope of which must amount to at least the difference of level, 387 feet, between Lake Huron

and Lake Ontario. The chain of Trent lakes is again continued towards Machedash bay, of Lake Huron, by the name of Severn river. The acclivity of the northern shore of Ontario, must exceed that of the south. The dividing line of the waters of Huron and Ontario, approaches to within twenty miles from the north-west margin of the latter. In long. 2° W., however, the dividing curve is inflected to the north in the Trent valley, to about 55 miles from Lake Ontario, and separates the waters of the two lakes in Talbot portage, 80 miles a little E. of N. from York, in Upper Canada. From the Talbot portage, the Trent lakes range 60 miles to the south-east, and contracting into a river, assume the name of Trent. By a bold sweep to the northward, and a very winding channel of 50 miles, the Trent is finally lost in the Bay of Quinte. This bay, and the shores of Lake Ontario, enclose a peninsula forming the county of Prince Edward. The Bay of Quinte is itself merely an enlargement and continuation of the Trent, which extending east 30, thence south 15, and finally, north-east 20 miles, merges into Lake Ontario, 20 miles above the town and harbour of Kingston, and head of St. Lawrence river.

A canal line has been proposed, by the Bay of Quinte, and the rivers Trent and Severn, from Lake Ontario to Gloucester bay of Huron. Amongst the many artificial improvements of the natural navigable routes in the interior of N. America, few would be productive of more benefits than that we have noticed. Independent of more safety to life and property, on a line of canal transportation, over that in open and immense lakes such as Ontario, Erie, and Huron; there would, in the instance before us, be a saving of more than half the distance. It is, by the proposed canal route, not 300 miles from Kingston or Sackett's harbour into Huron; whilst by the lengthened navigation of the large lakes and connecting straits, the distance exceeds 600 miles. It

may, however, be borne in mind, that to effect a canal line, a height must be overcome equal to the difference of level between Huron and Ontario, or 387 feet; but it is an improvement too obviously useful and practicable, to be longer neglected than what the slow increase of population and wealth will render insuperable. An attempt is now in operation, and nearly completed by the Ouse, or Grand, and Welland, or Chippewa rivers, to form a canal from the north-east shore of Lake Erie, into the western part of Lake Ontario. This work called the Welland canal is intended to admit vessels of from 60 to 90 tons burthen;* a size of vessels equal to the draught of those built on Lake Erie; and which, when the canal is completed, will remove the Falls of Niagara as far as internal commerce is concerned.

From the preceding elements, it is obvious, that Lake Ontario is the lower stage of an enormous chasm on the earth's surface. The rivers on every side pour into its bosom by rocky and precipitous channels; and not one navigable to any considerable distance without interruption from rapids, or in most instances, direct falls. The last of those confluents we have to notice is Black river, the mouth of which forms Sackett's Harbour. This stream rises in Herkimer and Oneida counties, New York, interlocking sources with the Mohawk, West Canada, Fish creek, and Sacondago rivers. Flowing a little W. of N. 50 miles by a very impetuous current over Lewis county into Jefferson, turns abruptly to S. W. by W., 12 miles to Watertown, where it again inflects to nearly west 12 miles to Sackett's Harbour; having an entire comparative course of 74 miles. The lower falls, 7 or 8 feet perpendicular, of Black river, is at Brownville, 8 miles by the channel above

* Evidence of H. J. Bolton, Solicitor General of Upper Canada, before a Committee of the House of Commons. Vide Nat. Intel. Nov. 4, 1826. No. 3980.

the harbour at Sackett's; the whole river may indeed be considered as a series of falls, which in less than 70 miles exceeds an aggregate depression of 1000 feet.

Another phenomenon which distinguishes Lake Ontario, is the convincing evidence of an abasement of its surface, afforded by its alluvial shores. Such evidence it may be conceded, however, exists around each of the other great lakes in the St. Lawrence basin, but in no other instance so strongly marked as it is along the margin of Ontario. This evidence goes far beyond the ordinary appearance of either ancient or recent alluvial deposits.

"From near the Genessee river to Lewistown, on the Niagara river, there is a remarkable ridge or elevation of land, running almost the whole distance, which is 80 miles, and in a direction from east to west. Its general altitude above the neighbouring land, is 30 feet, and its width varies considerably; in some places it is not more than 40 yards. *Its elevation above the level of Lake Ontario is, perhaps, 160 feet*, to which it descends by a gradual slope, and its distance from the water is between six and ten miles. There is every reason to believe, that this remarkable ridge was the ancient boundary of this great lake. The gravel with which it is covered, was deposited there by the waters, and the stones every where indicate, by their shape, the abrasion and agitation produced by that element. All along the borders of the western rivers and lakes there are small mounds, or heaps of gravel, of a conical form, erected by the fish for the protection of their spawn. These fish-banks are found at the foot of the ridge, on the side towards the lake; on the opposite side none have been discovered. All rivers and streams which enter the lake from the south, have their mouths affected with sand in a peculiar way, from the prevalence and power of the north-westerly winds. The points of the creeks which

pass through the ridge correspond exactly in appearance with the entrance of the streams into the lake. These facts evince, beyond doubt, that Lake Ontario has receded from this elevated ground; and the cause of this retreat must be ascribed to its having enlarged its former outlets, or to its imprisoned waters (aided probably by an earthquake) forcing a passage down the present bed of the St. Lawrence."*

Wherever I have myself examined the banks, shores, and alluvial plains near any of the lakes, but particularly those adjacent to Ontario, the correctness of Mr. Clinton's conclusions were to me manifest. When the surface of Lake Ontario stood at 170 feet above its actual level, the Falls of Niagara did not exist! Whether this stupendous revolution was effected by sudden or slow change it is difficult to determine; but it is probable that causes may have combined to produce great momentary alteration, and before or afterwards, the revolution completed by slow abrasion. It would be an unprofitable, because an unsatisfactory, inquiry, to attempt fixing the time of the *desechement* or more correctly draining of this inland sea.

The north-east part of Ontario is a congeries of islands, which is continued down the St. Lawrence about 50 miles. This part of the river is from 10 to 2 miles wide, without much current, and known by the local name of "*The Thousand Islands.*" The number actually amounts, if every naked little rock is taken into the list, to upwards of 1500. The peninsula of Prince Edward, and the small islets outside of Sackett's Harbour, are the higher eminences of this group, which thus extended into Lake Ontario, exceeds 100 miles in length.

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* De Witt Clinton, in Collections of the New York Historical Society; and Introductory Discourse to the Literary and Philosophical Society of New York, p. 52.

The small streams entering St. Lawrence on both sides of the Thousand Islands, serve by their courses to throw much light on the structure of this remarkable tract. Black river, which I have already noticed, flows for the first 50 miles of its course directly towards the St. Lawrence, until within 20 miles of that great stream, when suddenly turning it enters Lake Ontario.

Immediately below the valley of Black river follows that of the Oswegatchie. The latter stream is composed of two branches, Oswegatchie proper, and Indian river. These two constituents of Oswegatchie rise in Lewis county, and flow to the north-west, parallel to each other and to the Black river of Lake Ontario, and again obeying the bend of the latter above Watertown, the three channels loop on each other like spoons; but the two branches of the Oswegatchie, in place of continuing the lower course of Black river, turn upon their own courses by a very acute angle, and flowing a little E. of N. about 40 miles, unite 5 miles from the St. Lawrence, which they enter at Ogdensburg, 10 miles below the Thousand Islands.

On the side of Canada the water courses are inflected in a similar manner, though King's river and the outlet of Gananoquin lake flow S. S. W., and the Rideau branch of the Ottowas N. N. E.; all following, or nearly so, a parallelism to St. Lawrence. Like conformation of country is again shewn in the courses of Grass, Raquette, and St. Regis rivers, which drain Hamilton, Franklin, and St. Lawrence counties, New York, and enter St Lawrence river nearly together in N. lat. 45°, at St. Regis village, opposite Cornwall in Upper Canada, and at the head of Lake St. Francis.

Thus for a distance of 110 miles from its efflux from Lake Ontario, the St. Lawrence pursues a north-eastern course down one of a series of parallel valleys, presenting in its own and the channels

of its confluents a strong resemblance to similar phenomena in the middle sub-basin of the Hudson.

Before quitting the great internal sea of Canada, and entering on a survey of the lower part of St. Lawrence basin, I deem it necessary to insert some comparative estimates. The Canadian sea has been very justly designated the most extensive repository of fresh water on the globe; but it is a great mistake in relative geography to give Lake Superior the title of the American Caspian. I have shewn that the entire water surface of the Canadian sea covered 72,950 square miles. The Caspian, measured on Herisson's and Arrowsmith's maps, covers an area of 124,000 square miles. Consequently the whole water surface of the Canadian sea compared with the Caspian is only as 73 to 124, or not much above one half.

In one respect the inland seas of America and Asia are but too similar, if we except lake Ontario. The Caspian shores are very deficient in deep harbours, the water is shallow, and navigation difficult and dangerous. The mouths of the Ural, Wolga, Kur, Kizilozein, and Tredjend, are impeded with sand bars, and in some with rocks. In the Canadian sea, above the falls of Niagara, it is generally only in the rivers that safe anchorage can be found, and in many parts for great distances no kind of shelter is offered by the lake shores. In the natural laws of navigation, a shore is to the navigator in a storm either his haven of safety or gulf of destruction.

There are many reasons to induce a belief that the Caspian is gradually diminishing; several travellers, and amongst others, the acute Pallas, have given that opinion from actual observation. Mr. De Witt Clinton expressed to me the same opinion respecting the Canadian sea; an opinion in which I fully concur; but the diminution of the latter arises, it is probable, from a deepening of the channels of outlet, rather than from evaporation. The evidence

of the very great depression of the surface of lake Ontario has already been given; but the memoria, to prove depression of water surface, are by no means confined to the Canadian and Caspian basins. The parallel roads or lines, so minutely delineated in Brewster's Encyclopœdia, and found so common in the vallies of Scotland, communicating with the great Caledonian glen, and like phenomena in the vallies along the Upper Rhone, are specifically similar to the natural road along the margin of the Ontario alluvion. The depression of the Baltic, at the rate of 3 5-6 feet in a century, is now a determined philosophical fact.

Along both sides of the Atlantic ocean, evidences too strong to be resisted, and too numerous and wide spread to remain unobserved, attest, that when or since the present order of things commenced on this planet, the surface of that vast mass of water stood several hundred feet above its present level. Time was therefore when neither the St Lawrence or the Bosphorus of Thrace, existed; when the Appalachian, the Alpine, and the Dopine systems were the nuclei of extensive islands, and when the Black, Caspian, and Baltic seas were united: and are we not warranted in the induction that this terrific process is still advancing? I have already shown that an elevation of 90 feet would suffice to introduce the Atlantic tides into lake Champlain, and of 140 insulate that part of North America, enclosed by the Atlantic ocean, and the St. Lawrence, Sorrel, and Hudson rivers. 231 feet would force the ocean tides into lake Ontario, and would, on the opposite side of the Atlantic, reunite the Mediterranean with the Caspian sea, and Indian ocean; and would again join the Baltic with the Frozen ocean, and insulate the Scandinavian peninsula.

Many of the consequences which naturally and certainly must flow from an actual diminution of oceanic water are repugnant to human feelings, but

to deny what is true and contend for what is false, merely because our feelings are enlisted in the investigation, is any thing but philosophy. If an order of things is approaching which will produce a great and expansive change in the physiognomy of the earth, our scepticism will not for a moment retard its accomplishment.

The quantity of water discharged by the Canadian sea through Lake Ontario, is truly one of the most interesting problems in physical geography. No other river of this globe differs so much in the mass of contained fluid, and its annual expenditure, as the St. Lawrence. I have given in table 14, page 231, the water surface of St. Lawrence, and the individual and aggregate superficies of its lakes, expressed in square miles; and I may add, that the depth of the lakes is very unequal, and difficult to reduce to a mean. In such calculations minute accuracy cannot be expected; I hope, therefore, that the reader will accept the following table as an approximation to an estimate of the mass of water contained in the St. Lawrence and its lakes. It appears from the united testimony of every person who has made the necessary experiments, that lakes Superior, Huron, and Michigan, are vast and in some places unfathomable gulfs; that of all the great lakes, Erie is the most shallow, not exceeding a mean of 120 feet; and that Ontario varies from 450 to 534 feet. In order to be within the limits of reality, I have assumed a mean depth of 20 feet for all the surface contained in the last item of my estimate of 1500 square miles, for the superficies of St. Lawrence river, and the smaller lakes. For the three upper lakes, Superior, Huron, and Michigan, I have assumed a mean depth of 900 feet.*

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* In one square mile there is 27,878,400 square feet, and on the curve superficies of the earth, 196,797,200 square miles, equal to 5,486,391,060,480,000 square feet.

No. XIV.—*Table of the quantity of Water contained in the St. Lawrence basin.*

	Mean depth in feet.	Superficial area in square miles.	Superficial area in feet.	Solid contents in cubic feet.
Superior,	900	24,000	669,081,600,000	592,173,440,000,000
Huron,	900	19,000	529,689,600,000	476,720,640,000,000
Michigan,	900	15,000	418,176,000,000	376,358,400,000,000
Erie,	120	8,030	223,863,552,000	26,863,626,240,000
Ontario,	492	5,400	150,543,360,000	74,059,334,120,000
St. Lawrence, &c.	20	1,500	41,817,600,000	836,352,000,000
		72,930	2,033,171,712,000	1,547,011,792,360,000

Those who have read the table of the quantity of water contained in the St. Lawrence basin, inserted in my travels from New York to Detroit, at pages 89 and 90, will discover a discrepancy between the

two results. The difference arose from my having, when compiling the enclosed table, subjected the representation of the lakes of Canada to a more rigid admeasurement, and finding that, on the former occasion, I had overrated their aggregate area, and in some measure miscalculated their relative extent. Reduced as is the result, it certainly falls below reality, stupendous as may appear the amount: but assuming the cubic contents, shown by table 14, as the aqueous mass in St. Lawrence basin, the result may well appear astonishing; it would form a cubic column of near 22 miles each side, or if spread round the earth equally on each side of the equator, at a depth of one foot, it would nearly cover the torrid zone, and would actually envelope the earth to upwards of three inches in depth. In positive mass, it may be assumed on very solid grounds, that the St. Lawrence basin contains more than one half of all the fresh water on this planet.

Another problem of great interest next presents itself for solution, that is the quantum of annual discharge, which, though very great, does not from the nature of the basin, bear a near proportion to the contained body of fluid. Three points presented themselves to me as suitable, from which to calculate the discharge:—First, opposite Black Rock in the Niagara strait: second at the head of Ogden's island: and third, at Point Iroquois, a few miles above the second. At all these places the whole volume is contracted to within less than half a mile wide, but flowing with great velocity. In estimating the mean discharge of rivers, a general mistake is prevalent to assume the upper current as that of the whole mass of water. Allowing the St. Lawrence to be three fourths of a mile wide at any of the places I have pointed out, and to flow three miles an hour, with a mean depth of 50 feet, the result would be that a transverse section of the river would contain 105,600 superficial feet, which multiplied by

15,840, the lineal feet contained in three miles, would yield 1,672,704,000 cubic feet as the hourly discharge. This estimate exceeds by more than one-half the quantity which, on another occasion, I calculated for the Mississippi; and, though contrary to my own opinion when I first arrived on the banks of the St. Lawrence, I am convinced falls below reality.

The St. Lawrence is as uniform throughout the year in its diurnal or monthly expenditure, as is the Mississippi for its continual change. A rise of three feet is a more remarkable revolution in the former, than thirty would be in the latter river. Rising from the same vast table land, and having such an extended line of interlocking sources, it is worthy of remark, that no two rivers on earth so essentially differ in their general features, as do the Mississippi and St. Lawrence. The former is turbid in many places even to muddiness; the waters of the latter and of its lakes highly limpid. The channel of one river is chequered with innumerable lakes, some of which are of immense extent; whilst in the other no lakes of any note occur: annually, the Mississippi swells and overleaps its bed, overwhelming the adjacent shores; a casual rise of three feet once or twice in any given 50 years, is considered a great rise of the waters of the St. Lawrence. The Mississippi, flowing from north to south, passes through a great variety of climes, whilst its rival, winding from its source in a south-east direction to near N. lat. 41°, turns gradually to north-east, and again flows into its original climate of ice and snow. The Mississippi, before its final discharge into the gulf of Mexico, divides into a number of channels, having their separate egress; the St. Lawrence imperceptibly expands to a wide bay, which ultimately opens into the gulf of the same name. The banks of the Mississippi, particularly near the mouth, present a level scarce rising above the superior or highest spring floods of that stream;

those of the St. Lawrence generally slope from the river margin by an elegant acclivity; and when cleared from timber have the aspect of a most delightful basin. Much of the surface within the Mississippi basin are regions of open grassy plains, where few shrubs or trees break the dull monotony of the landscape; nearly the whole St. Lawrence basin, in a state of nature, is covered with a continuous and almost impervious forest. Such are the leading and contrasted features of these two great North American rivers.

Much more could be said on the subject of comparison between those rivers, but the necessary brevity of this view sets a limit to our survey, beyond which we cannot pass, and must therefore proceed to examine the residue of the St. Lawrence basin. I may remark, that vast as is the amount of water contained in the St. Lawrence basin above the points at which my estimates were made, the accession below those points is enormous. When the river issues from lake Ontario, the channel gradually becomes narrower, 75 miles down to Point Iroquois. In this distance the current imperceptibly increases, but continues very gentle, 65 miles to the Galloupe islands, 5 miles below the mouth of Oswegatchie. With the Galloupe commence a series of rapids, which are but little interrupted to the head of lake St. Francis, immediately below N. lat. 45°. Here the river dilates into a lake of thirty miles in length, and from one to six miles wide. At the lower end of this lake the river again contracts into a narrow channel of 16 miles, very much interrupted with rapids, the principal of which at the Cedars, is very difficult and dangerous, but followed by lake St. Louis, a sheet of water sixteen miles by from one to seven or eight.

At the head of lake St. Louis commences the island of Montreal, at the north-west angle of which the Ottawa joins the St. Lawrence from the north-

west. The Ottawas is one of the greatest branches of the St. Lawrence, rising in the mountains which wind north from lake Huron, at N. lat. 48°, and long. 6° W. Its course is generally to the south-east, with an impetuous current, very much impeded by falls and rapids. Comparative length 450 miles. Like all the confluents of St. Lawrence from the north-west, the volume of the Ottawa is, compared to its length of course, immense. Settlements have been made for about 200 miles up this river, but at any considerable distance on either side of its channel the country remains literally unknown, though as far as explored, the soil is excellent, and overshadowed by a dense forest of very heavy timber.

Such is the body of water in St. Lawrence, where its channels encircle Montreal and Jesus Islands, that the vast volume of the Ottawa makes no perceptible augmentation on the recipient, which pours round the islands over rapids of more or less descent. From the La Chine rapid about five miles above the city of Montreal, and on the same channel, a canal has been constructed, to pass the rapid and to meet ship navigation at that city. The port of Montreal is by the inflections of the stream 580 miles above the island of Anticosti, and yet thus high, vessels of six hundred tons can be navigated.

The confluence of St. Lawrence and the Ottawa, is, perhaps, one of the most picturesque spots in the world. Besides some of minor note, three channels form the two large islands, Montreal and Isle Jesus, which unite at Bout de l'Isle, or the lower end of the two main islands. Below Montreal, though the features of the river and its banks undergo no very rapid change, yet, as a navigable stream, the introduction of ships below Montreal gives a new and more interesting aspect to the scenery.

Montreal is situated at N. lat. 45° 30′, and at long. 3° 28′ E. At the lower part of La Chine rapid, the river turns to a little E. of N., which course

is continued 22 miles to Bout de l'Isle, where it bends to nearly N. E. 30 miles to the head of lake St. Peter, and entrance of Chambly river, from the south. Lake St. Peter is comparatively shallow, only admitting vessels of 18 feet draught, and though what is usually called by that name, terminates about ten miles above by the contraction of the channel, it may be considered as continued to the head of tide water, at the town of Three Rivers, and mouth of St. Maurice river, from the north.

The head of the tides in St. Lawrence is a remarkable point in the hydrography of North America, and demands particular notice in an elementary view. With the highest ascent of the tides, is attained nearly the level of the ocean, in which the tide wave originates; we may therefore consider the level of St. Lawrence immediately below the town of Three Rivers, as that of the Atlantic ocean. The following table will more clearly exhibit the relative distance from the head of tide water to Lake Ontario, and in a contrary direction to the Atlantic ocean.

No. XV.—*Table of the stationary distances down the St. Lawrence, from Kingston, at the lower extremity of Lake Ontario, to the mouth at the western point of the island of Anticosti.*

	Miles.
Kings to the mouth of Gananoqui river	16
Morristown on the New York, and Brockville, at the lower end of the Thousand Islands in Upper Canada, Leeds county	27—43
Prescott, in Upper Canada, Grenville county	12—55
Ogdensburg and mouth of Oswegatchie, St. Lawrence county, New York	1—56
Galloupe Islands, or Red Mill	12—68
Point Iroquois	5—73

	Miles.
Hamilton, and island of Rapid Plat	3—76
Head of Long Sault Rapids	16—92
Narrows, at the lower end of Long Sault Rapids	10—102
Mouth of Grass River	1—103
Mouth of Racket River	3—106
Mouth of St. Regis river, N. lat. 45°, St. Regis village, opposite Cornwall in Stormont county, Upper Canada, and head of Lake St. Francis	2—108
Bodet river and limit, on the left bank of St. Lawrence, between Upper and Lower Canada	18—126
Lower end of Lake St. Francis	12—138
Rapid of the Cedars, (*Rapides aux Cedres*)	8—146
Head of Lake St. Louis	4—150
Lower end of Lake St. Louis, and village of La Chine	17—167
City of Montreal	6—173
Cape St. Michael, at Boute de l'Isle	15—190
Mouth of Chambly river and head of Lake St. Peter	30—220
Delta, at the mouths of Yamassee and St. Francis rivers, the former from the south, and the latter from south-east	12—232
Lower end of Lake St. Peter	16—248
Town of Three Rivers, (*Trois Rivieres*) and head of tide water in St. Lawrence	12—260
From Three Rivers to the mouth of river Becancour, from the south-east	5—265
Village of St. Anna, at the mouth of St. Anna river	20—285
Richelieu Rapids	20—305
Village of St. James Cartier, at the mouth of St. James Cartier river	4—309
Mouth of the Chaudiere	25—334
Quebec	6—340
Head of the island of Orleans	5—345

	Miles.
River and Falls of Montmorenci, on the left shore	2—347
Lower end of the island of Orleans	21—368
L'Isle au Coudre	27—395
Mouth of Saguenai river, from the left	55—450
Betsiamitis river, from the left	70—520
Breslard river, from the left	12—532
Black river, from the left	10—542
Cape Coribon, or Cœur Bon, on the left	50—592
Head of the island of Anticosti	100—692

There is some difficulty in fixing on the real mouth of St. Lawrence; the most natural to my own eye is the separation of the great straits above the island of Anticosti; and if that place be assumed as the mouth, then the tide ascends this channel 432 miles, almost four times farther than into the Hudson; and if the Amazon be excepted, the highest tide on earth.

As in the Hudson, the tide in the St. Lawrence passes through a chain of primitive mountains, on a breach in which stands the city of Quebec.* As I have before observed respecting the primitive chain which forms the Thousand Islands, I repeat respecting that which traverses the same river near Quebec, that the latter as well as former were once con-

* Is it not the same chain which crosses the Hudson at the Highlands, and St. Lawrence at Quebec? If any conclusion can be safely drawn from analogy in the structure and range of the Appalachian system, this question must be answered affirmatively. From our maps little aid can be obtained in that or any other problem in physical geography. A real minute geological survey of the region enclosed by the Atlantic ocean, and the Hudson and St. Lawrence rivers, would be a most invaluable addition to science.

tinuous, and confined the water above it, in a lake which must have been drained by one of those operations of nature which impose lasting changes on the globe.

"When this opening was made by the force of the included water, the land was laid bare on both sides of that river (*St. Lawrence*,) as far as St. Regis, including the islands of Montreal and Jesus; and by the same operation, the land on both sides of Lake Champlain, would be drained as far as Ticonderoga and Whitehall."—*Dr. S. L. Mitchell's Notes on Cuvier's Theory of the Earth*, p. 391.

The ancient lake could not have been bounded by any limit near St. Regis. At that village there exists no land of any considerable elevation above the present level of the water, much less, sufficient to cover Montreal island, or connect Lake Champlain on a similar height with the supposed larger lake above Quebec. No current of any consequence exists in St. Lawrence from Lake Ontario to the lower extremity of the Thousand Islands, consequently the actual depression of that river commences below the latter, near Ogdensburgh. By recurrence to table 15, it will be seen that the lower extremity of the Thousand Islands is forty-three miles below Kingston, and therefore, two hundred and sixty, less forty-three, or 217 miles is the distance in which the water of St. Lawrence falls 231 feet. Therefore if any impediment of that height was raised at Quebec, and the decumbent waters were confined on both sides by barriers of sufficient elevation, the accumulated water would stand level to the mouth of Niagara strait; but it has been shewn that the Hudson and Champlain summit level was only 140 feet above the ocean level, consequently if a rock barrier ever existed at Quebec, to upwards of 140 feet, the St. Lawrence waters passed down the Hudson.

I have suggested the probability of a depression

in the surface of the Atlantic ocean. If such a revolution is admitted, many of the difficulties in the physical geography of the continent of North America will be removed. Is it not probable, that when the margin of the ocean stood at the base of the Appalachian chain, New England, New Brunswick, and the south-east part of Lower Canada, were insulated; and that as the ocean gradually retired, cataracts were produced over the exposed rock barriers? In such a process the outer barrier must yield first, for the plain reason, that until it did in part yield, the more interior barriers would remain submerged. It is therefore probable that the Quebec barrier was broken by a cataract, which finally became removed, and succeeded by another, which in turn sunk before the abrading water and ice. When the second granitic chain was broken, a depression in the depth and great contraction in the extent of Lake Ontario took place. It appears from the phenomena exhibited by most rivers, that schistose secondary yields more slowly to the action of water, than do primitive rocks, though the latter are more solid in their texture than the former. A body of water, and even masses of ice, glide smoothly over horizontal slate, without producing much effect; primitive rocks, on the contrary, by their fractured surface, oppose points of contact to the moving fluid or ice, which tears away the resisting fragments, and in the lapse of time produces an uninterrupted channel.

Below the Thousand Islands, the rapids of St. Lawrence commence, at the Galloupe islands, and occur at unequal distances to the Richelieu rapids, 45 miles below the head of tide water, or through 237 miles. It is in a high degree interesting, that the lower rapids are produced by the tides. When the ocean swell is at the full, Richelieu rapids disappear; but as the tides rise there from 17 to 24 feet, the ebb exposes the rocks. Should the sur-

face of the Atlantic continue to depress, the time will arrive when Richelieu rapids will have a similar aspect to those at the Galloupe islands, Long Sault, the Cedars, and La Chine.

The breadth, strength, and texture, of the composing materials in the bed of the St. Lawrence, render a farther depression of Lake Ontario the work of unlimited ages; and compared with the periods in human history, the present order of things in that channel may be viewed as permanent. No earthquake short of a convulsion which would shake and disrupt the planet to its centre, could remove such enormous masses. I have long indulged an opinion, however, that the accidental agency of earthquakes and volcanoes, had been over-rated, whilst the slow, but constant action of water has met with too little attention from philosophers and naturalists.

We shall close this part of our subject by some remarks on the particular valley of Lake Champlain and Chambly river. The latter is humble in respect to length of course, but is in many other essentials the most important confluent of St. Lawrence. Lake Champlain valley, if taken in its full extent, is occupied by two unequal sub-basins; that of Lake George, and that of Champlain proper, the former nearly 200 feet above the latter.

Lake George is a sheet of water lying in an apparent rent between the adjacent mountains, extending from S. S. W. to N. N. E. 34 miles, with a width from one to three miles, discharging its waters into Lake Champlain, at Ticonderoga. The upper Hudson winds so completely round lake George as to prevent the latter from receiving even a large creek. Lake Champlain, on the contrary, is the recipient of several rivers of some comparative magnitude. This fine sheet of water forms a part of the great North American Glen, and stretches in a direction very nearly from south to north, and from N. lat.

43° 30′, to 45° 04′, or through 109 miles. The breadth varies from half a mile to twelve miles. The depth, similar to the higher and longer lakes of St. Lawrence basin, is in many places prodigious. It is in reality the lower plateau of a deep vale. The rivers Poulteney, Otter, Onion, La Moelle, and Missisque, all rise in the central valley of Vermont, and in their progress into the eastern side of Lake Champlain, pierce the Green Mountain chain, falling in their courses of from 40 to 60 miles, perhaps from 500 to 1000 feet. Similar remarks again apply to the *Riviere au Sable*, Saranac, and Chazy, which enter the western side of the lake, also from a mountainous region.

The fact that the surface of Lake Champlain was only 90, and the summit level between it and the Hudson only 140 feet, has been stated. The ancient union with the Hudson has been restored by human genius and labour, and only a fall of 90 feet is to be overcome to connect its bosom with the St. Lawrence tides by a canal down its outlet, the Sorrel or Chambly. The latter leaves the lake almost exactly on N. lat. 45°, and enters St. Lawrence at the head of lake St. Peter, at N. lat. 46° 03′, having a northern course of 70 miles. Nearly at midcourse this stream flows within 13 miles from the St. Lawrence, at Montreal, and in its farther course approaches its recipient by an acute angle. Very little farther labour will be necessary to complete an uninterrupted commercial connexion between this beautiful valley and the two great channels of Hudson and St. Lawrence, and leave to the inhabitants of the basin the choice of marts.

But with Champlain basin, advancing to the N. E., facility of constructing artificial channels of navigation, terminates. The river St. Francis, which rises also in the Appalachian valleys, far within Vermont on one side, and on the borders of Connecticut on the other, draws its remote sources from an

elevated table land, and though disembogueing into Lake St. Peter, near the outlet of the Chambly, offers very different navigable features. The river St. Francis is formed by two branches, the St. Francis proper, and the outlet of Lake Memphramagog. St. Francis rises in Wolestown, Colerain, and Garthly townships, Lower Canada, in a series of lakes, which discharge to the S. W. and continue in that course 60 miles to the point of confluence with the outlet of Lake Memphramagog.

The latter has its sources in Essex and Orleans counties of Vermont, in a number of creeks which unite in the northern part of the latter, and flowing into Lake Memphramagog, enter Lower Canada between Potton and Stanstead. This lake is a narrow, but extremely picturesque sheet of water, 23 miles in length, from which an outlet of 17 miles unites with St. Francis. The entire length of the valley of Memphramagog, is about 60 miles, extending from N. E. to S. W. with a slope in direct opposition to the St. Francis, though like an indefinite number of other streams in the Appalachian system, which are mutual confluents, the current of the two foregoing are in opposite directions towards each other, and when uniting, turning at nearly right angles to their common valley. This is the case in the present instance; the St. Francis, after the confluence of its two main branches, bends to N. W., and pursuing that course 70 miles into Lake St. Peter, 12 or 13 miles N. E. by E. from the mouth of the Chambly, having an entire course by either branch of 130 miles, spreading over an area of about 5000 square miles.

Few if any of the other small rivers of the United States or Canada, have a more rapid descent; the higher sources of Lake Memphramagog, in the central valley of Vermont, and perhaps also those of Lake St. Francis, rise on an elevated table land, of at least 1000 feet above the level of the Atlantic

ocean. Here again we have another instance of the apparent anomaly of climate, in the St. Lawrence basin. The seasons are much milder on the shores of Lake Champlain, and even on Lake St. Francis, than on the elevated region from which flow in opposite directions, the sources of Kennebec, Connecticut, St. Francis, and Chaudiere rivers. The causes of a difference of temperature, inverse to the latitude, must be obvious from principles repeatedly laid down in this view.

The Chaudiere, the last stream entering St. Lawrence from the right which merits specific notice, is a most impetuous mountain torrent; the richly varied, wild, and romantic scenery of whose banks has excited the admiration of every cultivated mind who has passed along its valley. It is also a classic stream in the history of the United States; as by its banks, General Arnold conducted, early in the revolutionary war, and amid all the rigors of an Alpine winter, a part of that army whose operations in Canada seem to partake of the hue of romance, whilst entitled to the truth of history.

The Chaudiere rises by a creek flowing north into Lake Megantic, and *Riviere du Loup*, interlocking sources with the St. Francis, Connecticut, Androscoggin, Kennebec, Penobscot, and St. John's. With an elliptic curve to the east, but a general northern course of 100 miles, it falls into St. Lawrence 6 miles above Quebec.

Geographically the Chaudiere valley stretches from N. lat. 45° 25′ to N. lat. 46° 44′, with long. 6° E. ranging over it longitudinally. It will not be necessary to repeat observations already made respecting the effect of climate on a tract of such rapid descent as the valley of the Chaudiere. I may merely observe, that independent of mountain ridges, it is probable that the table land from which the Connecticut and Chaudiere and neighbouring rivers have their sources, is the most elevated in the

United States, and if so, must exceed 2000 feet, or an elevation equivalent to five degrees of lat. It cannot, or it ought not, therefore, to excite surprise, to find the winters of upper Connecticut, and Maine, more rigorous than on the tide level of St. Lawrence, a degree of lat. more northward.

Below the Chaudiere, the right slope of St. Lawrence narrows rapidly, and about 120 miles below Quebec, or nearly opposite the mouth of Saguenai, is not above ten miles wide from the banks of the St. Lawrence to the northern sources of St. John's. Advancing still farther down the basin, its right slope widens, but never again spreads to 40 miles in breadth, and finally terminates at N. lat. 49° 12′, and long. 12° 40′ E.

We may close our protracted view of the St. Lawrence basin by a brief survey of that part of the northern slope below the valley of the Ottawas. This extensive and imperfectly known region comprises a space of upwards of 700 miles from N. E. to S. W., with a mean width of at least 250 miles; area exceeding 175,000 square miles. As far as any dependence can be placed in our maps and on geographical analogy, the rivers of this tract exhibit in a very striking manner the lake character, and in proportion to length of course pour down into their recipient enormous volumes of water, flowing with excessive velocity. The principal of these rivers are St. Maurice above Quebec; and Saguenai, Betsiamitis, Breslard, and Black river, below that city.

The following account of the Saguenai, extracted from Bouchette's Canada, page 563–566, may serve to exhibit the character of the rivers of this rapidly inclining plain. I may premise that the respectability of Mr. Bouchette, and his ample means of correct information, preclude any suspicion of undue warmth of description.

"The river Saguenai, which discharges itself into

the St. Lawrence, at *Pointe aux Allouettes*, is the largest of all the streams that pay their tribute to the *Great river*. It draws its source from Lake St. John, a collection of water of considerable expanse, lying in N. lat. 48° 20′, long. 72° 30′ W., (W. C. between 4° and 5° E.) receiving many large rivers, that flow from the north and north-west, from an immense distance in the interior, of which, the Piecougamis, the Sable, and Pariboaca are the principal. At its eastern extremity, (*Lake St. John*), two large streams, one called the Great Discharge, and the other the Kinogami, or Land river, issue from it; which after flowing about 57 miles, and encompassing a tract of land of the mean breadth of 12 miles, unite their waters, and become the irresistible SAGUENAI; from which point it continues its course in an easterly direction for about 100 miles down to the St. Lawrence. The banks of this river throughout its course are very rocky and immensely high, varying from 170 even to 340 *yards* above the stream. Its current is broad, deep, and uncommonly vehement. In some places where precipices intervene, there are falls from fifty to sixty feet in height, down which the whole volume of the stream rushes with indescribable fury and tremendous noise. The general breadth of the river is from two miles and a half to three miles, but at its mouth the distance is contracted to about one mile. The depth of this enormous stream is also extraordinary. At its discharge, attempts have been made to find its bottom with 500 fathoms of line (3000 *feet*) but without effect; about two miles higher up, it has been repeatedly sounded, from 130 to 140 fathoms; and from 60 to 70 miles from the St. Lawrence, its depth is found from 50 to 60 fathoms. The course of the river, notwithstanding its magnitude, is very sinuous, owing to many projecting points from each shore. The tide runs about 70 miles up it, and upon account of the obstructions occasioned by the nu-

merous promontories, the ebb is much later than in the St. Lawrence; in consequence of which, at low water in the latter, the force of the descending stream of the Saguenai is felt for several miles.

"Just within the mouth of the river, opposite to Pointe aux Allouettes, is the harbour of Tadousac, which is very well sheltered by the surrounding high lands, and has good anchorage for a great number of vessels of large size, where they may lie in perfect safety."

From the little that is distinctly known respecting the Betsiamitis, Breslard, and Black rivers, their features are strongly similar to those of Saguenai; but except near trading stations, and along the main streams, the rivers and lakes, and country they drain, towards Labrador continue a *Terra Incognita.* The great elevation, and an advance northward to 52° of lat., render the climate of those regions severely and permanently cold in winter. The highest civilized agricultural settlement that I have been made acquainted with on the continent of North America is that of Mingan, along the northern shore of St. Lawrence, opposite the island of Anticosti, and between N. lat. 50° and 51°. In all the immense interior tract of 1200 miles in length, equal to the distance from Maine to Georgia, or from the western coast of France to the sources of the Dnieper, all is yet silence and barbarism; but let it not be understood that these interminable regions are naturally sterile; for the fact is the contrary, and the day is rapidly advancing when science and civilization will take place of wilds and desolation. Let it be remembered that no unfavourable opinion is held respecting the soil and climate of Canada, but was once prevalent concerning similar objects in the United States.

We have thus passed cursorily over the great features of this very peculiar basin, and we may now in few words conclude our survey by a general sum-

mary. As a basin of inland commerce, it may be truly asserted that the St. Lawrence stands alone on the globe. The sublime and boldly sketched features of that vast and unequalled assemblage of fresh water lakes demand more than ordinary attention from the geographer and statistical enquirer. In its main channel, that of the St. Lawrence, we have found the ocean tides penetrating to 432 miles, or about midway between Quebec and Montreal. Above tide water to Ogdensburg, the channel is much impeded by shoals and rapids, but in no place actually impassable with vessels, either ascending or descending. Ships of the line, of the first class, are navigated to Quebec, and those of 600 tons to Montreal, upwards of 500 miles from the Gulf of St. Lawrence.

But again passing from St. Lawrence we merge into an inland sea, already rendered classical from contending fleets. At the lower extremity of the first expanse of that central sea, Ontario, two harbours present their deep recesses to the most unwieldy vessels of war; these are Kingston and Sackett's. Beyond those spacious havens the harbours of the Canadian sea are generally shallow, but no region of the earth presents such varied, contrasted, and peculiar scenery. Even the mighty Niagara is but the principal object of interest on this expanded canvass. Without ascending above Buffaloe, it may be doubted whether any other equal distance can afford more to arrest the admiration of the traveller than the space from Lake Erie to the city of Quebec.

Than the Thousand Islands, a scene can no where be found more savage, rude, and wild. The placid and limpid water reflects the broken rocks, and the few trees and shrubs which rise amid the fissures of their fractured ruins. No human habitation appears to enliven for an instant this picture of eternal waste; but passing this scene of silent and magnificent de-

solation, a fairy land seems to open. Where the Thousand Islands terminate at Brockville, the river dilates into a small bay, and farther down slowly contracts; the shore on both sides rising by a regular and gentle acclivity, exposes a landscape which for placid beauty cannot be excelled. This is the general character of the main banks until far below Montreal. Four miles below Ogdensburg a group of islands, the Galloupe, commences, but with a physiognomy entirely distinct from the naked rocks of the Thousand Islands. The Galloupe cluster exceeds thirty in number, and lying with every inclination to the general course of the river, and varying in size from 1½ miles to 20 yards in length; almost all of an elliptical form, and rising from the water by a globular swell. In the bland air of a Canadian summer evening the imagination can scarcely conceive any spots more delightful than those isles. On many which have been formerly cleared of timber and again overgrown with ash, linden, wild cherry, and aspen trees without underwood, it is a real recreation to contemplate the enchanting prospect, the cultivated shores, the floating barks, and the majestic river whose overpowering volume is spread around.

Proceeding downwards a constant succession of natural objects meet the traveller's eye; objects commensurate in their outline to the scale of the basin in which they are placed.

Below Montreal, the country adjacent to the river becomes less elevated, and of course the scenery less bold and striking, and this character of coast continues to near the head of the tides at the mouth of St. Maurice; but, here again the banks resume all their varied splendour of contrasted beauty, and rise on both sides to the height of Cape Diamond, on which Quebec is placed. "At this capital of the province," says Bouchette, "there is a most excellent port and a capacious basin, wherein the great-

est depth of water is 28 fathoms, with a tide rising from 17 to 18 feet, and at the springs from 23 to 24 feet. From whence, and from Point Levi on the south shore, one of the most striking panoramic views, perhaps, in the whole world, offers itself to notice. The assemblage of objects is so grand, and though naturally, yet appear so artificially contrasted with each other, that they mingle surprise with the gratification of every beholder. The Capital on the summit of the cape, the river St. Charles flowing for a great distance through a valley abounding in natural beauties, the falls of Montmorenci, the island of Orleans, and the well cultivated settlements on all sides, form together a *coup d'œil* that might enter into competition with the most romantic."

This grandeur in the face of nature remains undiminished if not increased below Quebec. At Rivière du Sad, 30 miles lower than the capital, the river is 11 miles wide, and the white churches, hamlets, villages, and farms, protruded on the vision by the dark and thick woods, and the strongly defined back-ground of lofty mountains, maintain the pre-eminence of landscape along the St. Lawrence.

It is not, however, in summer alone, or in autumn, that the St. Lawrence basin can be seen to most advantage. In all the rigors of a Canadian winter, when the capacious bosom of most of its rivers are turned into solid and glassy roads, and in the vicinity of Quebec this change is annual, then the more intense and continued the frost, the more pertinaciously do the inhabitants boast of their season of business, amusement, and pleasure. If frost and snow do not altogether compensate to the Canadian the open navigation of summer, the long and unbroken frozen surface of Lower Canada, renders winter in that country certainly preferable to the same season in the middle states of the United States, and the southern part of Upper Canada.

Excessive tides prevent the St. Lawrence ever becoming covered with compact ice, below Quebec, but such are the enormous masses driven in every direction by the winds and currents, that the river is utterly unnavigable nearly half the year. It is then amid snow and ice that gliding vehicles supply the place of sails, oars, and wheels, and the smooth faces of the streams are transformed into most excellent roads, and the Canadian, shut from the ocean, performs his rapid journey of business or social intercourse.

In fine, at any season of the year, if taken as a whole, I cannot conceive of a more pleasing region than the St. Lawrence basin; nor of any part of the earth where nature has engrouped more to gratify the traveller or the natural philosopher,—and I might say the statesman, for here is a powerful nation in its cradle.

No XV.—*Table of the extent and geographical position of the basins of the Atlantic slope, from Florida Point, to the mouth of St. Lawrence river.*

BASIN.	Length	Mean Breadth	Area.	Between latitudes.		Between longitudes from Washington City.	
St. John's of Florida	120	40	4,800	28°15′	30°19′	4°12′	5°30′ W.
St. Mary's and Nassau	60	35	2,100	30 06	31 05	4 31	5 40 W.
St. Illa	140	30	4,200	30 50	31 51	4 30	6 25 W.
Alatamaha	250	50	12,500	31 15	34 28	4 22	7 20 W.
Ogeeche	160	30	4,800	31 42	33 36	4 02	6 05 W.
Savannah	250	40	10,000	31 49	35 08	3 52	6 45 W.
Port Royal	70	10	700	32 12	33 00	3 41	4 15 W.
St. Helena and Edisto	120	40	4,800	32 23	33 52	3 24	4 42 W.
Charleston	30	30	900	32 40	33 20	2 42	3 20 W.
Santee	250	40	10,000	33 05	36 03	2 12	5 45 W.
Winyaw, or Pedee	250	70	17,500	33 10	36 35	2 10	4 40 W.
Cape Fear	200	40	8,000	34 00	36 20	38	3 08 W.
Onslow	30	30	900	34 30	35 00	0 00	0 50 W.
Pamtico	150	50	7,500	34 48	36 20	1 30 E.	2 18 W.
Albemarle, or Roanoke	300	60	18,000	35 28	37 28	1 20 E.	3 40 W.
James river	250	40	10,000	36 40	38 20	1 00 E.	3 40 W.

York river	130	20	2,600	37°15′	38°16′	0°41′ E.	1°22′ W.
Rappahannoc	140	20	2,800	37 34	38 44	0 40 E.	1 20 W.
Potomac	180	65	11,700	38 00	40 00	0 45 E.	2 45 W.
Patuxent	90	10	900	38 15	39 22	0 37 E.	0 10 W.
Patapsco	35	30	1,050	39 00	39 40	1 00 E.	0 10 W.
Peninsula, or Eastern shore	180	30	5,400	37 15	39 50	0 42 E.	1 48 E.
Susquehanna	230	135	31,050	39 33	42 55	2 20 E.	1 54 W.
Chesapeake bay	180	20	3,600	37 00	39 33	0 26 E.	1 24 E.
Delaware	250	45	11,250	38 45	42 30	0 42 to	2 35 E.
Atlantic coast of New Jersey	125	20	2,500	39 06	40 29	2 07	3 03 E.
Hudson	280	50	14,000	40 13	44 08	1 35	4 00 E.
Long Island	120	9	1,080	40 34	41 10	2 58	5 08 E.
Houssatonick	100	20	2,000	41 08	42 34	3 26	4 18 E.
Connecticut	275	40	11,000	41 18	45 12	4 05	5 55 E.
Thames	60	25	1,500	40 29	42 14	4 35	5 28 E.
Narragansett	65	30	1,950	41 20	42 20	5 05	6 14 E.
Buzzard's	60	25	1,500	41 13	42 52	6 50	7 07 E.
Massachusetts bay	150	8	1,200	41 40	42 40	5 38	7 04 E.
Merrimac	150	35	5,220	42 02	44 12	4 56	6 10 E.
Piscataqua	40	25	1,000	42 54	43 35	5 36	6 32 E.
Saco	70	25	1,750	43 20	44 18	5 25	6 40 E.
Presumscot	50	12	600	43 32	44 17	6 10	6 55 E.

TABLE No. XV.—*Continued.*

Kennebec	150	60	9,000	43°40′	46°12′	5°45′ to	7°50′ E.
Penobscot	120	60	7,200	43 53	46 12	6 36	9 10 E.
Union, Machias, &c.	90	30	2,700	44 00	45 00	8 20	10 00 E.
St. Croix	55	30	1,650	44 45	45 50	8 45	10 00 E.
St. John's	240	80	19,200	45 15	48 00	6 40	11 40 E.
Nova Scotia, peninsula of	210	75	15,750	43 30	45 45	10 50	16 00 E.
Cape Breton	150	35	5,250	45 30	47 05	15 30	17 20 E.
Prince Edward	90	25	2,250	46 00	47 12	12 30	15 20 E.
Isthmus of Fundy	90	25	2,250	45 25	46 20	12 30	14 20 E.
Eastern Slope of N. Brunswick	220	50	11,000	46 00	48 30	9 00	12 30 E.
TOTAL	1900	162	308,600	28 15	48 30	7 20 W.	17 20 E.

In a geographical point of view the Great Basin of St. Lawrence is also a part of the Atlantic slope; I shalltherefore give a table in connexion with the former.

No. XVI.—*Table of the Area of the St. Lawrence Basin by the Rhumbs.*

SECTION.	No. of Rhumbs.	Area in square miles.	Between Latitudes.		Between Longitudes.	
South from Lake Erie and Michigan	1	3,686	40°	41°	4°40′	8°00′W.
Chiefly between do. do.	6	21,780	41	42	3 00	10 30 W.
Along the upper St. Lawrence, on the	11	39,325	42	43	11 40 W.	1 30 E.
peninsulas between lakes Ontario, Erie,	14	49,224	43	44	12 10 W.	2 20 E.
Huron and Michigan, and west from the	17	58,752	44	45	12 10 W.	5 15 E.
latter; and partly in the United States,	20	67,940	45	46	15 10 W.	6 40 E.
and partly in the British territories.	23	76,728	46	47	17 12 W.	7 10 E.
On the lower part of the Basin, on the	25	81,875	47	48	17 00 W.	8 30 E.
northern confluence of the St. Law-	10	32,140	48	49	15 00 W.	12 20 E.
rence, and around lake Superior. Only	9	28,323	49	50	14 00 W.	10 40 E.
a minor part of these Rhumbs fall with-	12	36,792	50	51	12 30 W.	13 15 E.
in the United States.	6	18,096	51	52	3 00 to	12 40 E.
		514,661				

Table 16, will at a single glance correct a common error; that is, in giving a uniform climate to Canada. The mouth of the St. Lawrence, is traversed obliquely by the 49th curve of latitude, whilst the southern part of Upper Canada, at the mouth of Detroit river, is very little above 42°, differing 7° of lat. The whole basin it will be perceived stretches through the extremes of 11°.

If the several subdivisions of the St. Lawrence basin are taken separately, and their respective extent given in round numbers, the results are as follows:

No. XVII.—*Table of the geographical position and extent in square miles of the sections of the St. Lawrence Basin.*

NATURAL SECTION.	Mean Length.	Mean Breadth.	Area in square miles.
Region lying N. W. from lake Superior	300	80	24,000
Region lying N. E. from lake Superior	400	80	32,000
Region lying N. from lake Huron, and W. from the sources of Ottawas riv.	200	200	40,000
Peninsula between lakes Ontario, Huron and Erie	200	80	16,000
Region N. W. from the St. Lawrence and below Ottawas river	700	250	175,000
Region S. E. from the St. Lawrence, below Richelieu river	500	50	25,000
Triangle, included between the rivers Black, St. Lawrence, and Richelieu	230	50	16,500
South from lake Ontario, and W. from Black river	200	80	16,000
S. E. and S. from lake Erie and E. from Maumee river	300	30	9,000
Peninsula of Michigan	250	150	37,500
W. from lake Michigan, and South from lake Superior	400	120	48,000
Total area of St. Lawrence basin by the natural sections, exclusive of the lakes			439,000
Lake Superior	300	80	24,000
Lake Huron	200	95	19,000
Lake Michigan	300	50	15,000
Lake Erie	230	35	8,030
Lake Ontario	180	30	5,400
St. Lawrence and smaller lakes			1,500
Total water surface in St. Lawrence basin			72,930
Aggregate area of Land and Water in St. Lawrence basin			511,930

No. XVIII.—*Summary of the Atlantic Slope of North America, including the Basin of St. Lawrence.*

NATURAL SECTION.	Length	Mean Breadth	Area.	Between latitudes		Between longitudes	
S. W. part of Atlantic Slope, from Florida Point to Neuse Basin inclusive	780	104	81,200	24°15′	36°20′	7°20′ W.	1°30′ E.
Middle Section of Atlantic Slope from Pamptico Basin to Buzzard's Bay inclusive	760	186	141,380	35 28	45 12	3 40 W.	7 07 E.
N. E. part of Atlantic Slope, from Massachusetts Bay to Chaleur Bay inclusive	500	172	86,020	41 40	48 30	5 38 to	17 20 E.
Total of the St. Lawrence Basin.			511,930	40 18	52 00	17 00 W.	13 00 E.
Total of the Atlantic Slope	2000	410	820,530	24 15	52 00	17 20 E.	17 00 W.

The reader will observe that the areas in the preceding tables Nos. 15, 16, and 17, are expressed generally in round numbers, and that in some instances more is taken into the basins than would strictly be included, as in the case of Massachusetts Bay, in which Cape Cod is comprised. This was done to avoid the omission of large fractions, and to limit as far as possible the specific sections.

CHAPTER VIII.

GEOGRAPHICAL VIEW OF THE RIVER BASINS OF THE UNITED STATES, CONTIGUOUS TO THE DELTA OF THE MISSISSIPPI.

Widely extended as are the united regions included in the Atlantic slope of North America, and the basin of St. Lawrence, we now enter on another basin, that of the Mississippi, more extensive than the two former taken together. I have already shewn that the Mississippi and its confluents present features so totally different that nothing but contrast can be drawn between them and the St. Lawrence. In passing from one basin to the other a new world opens to the traveller; the face of nature is changed; the objects are distinct in species, almost in genera, and it is difficult to conceive ourselves on the same continent, and on a region contiguous to that from which we have departed.

In respect to the distinctive feature of lakes so immense in one basin, and almost unknown in the other, it may not be irrelevant to observe that we are sometimes deceived by too greatly restricting terms. "Before reaching Montreal," says Mr. Bouchette, when speaking of the St. Lawrence, "the lakes St. Francis, St. Louis, and des Montagnes, present themselves: they do not admit of comparison with those already noticed, and can, indeed, only be considered as so many widenings of the river."

To this it may be replied, that if the first springs which afterwards form the rivers west of Lake Superior are taken into the account, then is that great

LOUISIANA
MISSISSIPPI
NATCHITOCHES
Alexandria
Opelousas
Monroe
Washitta R.
Red River
Sabine R.
To Nacogdoches
Calcasiu R.
Calcasiu L.
L. Mermentou
Vermillion Bay
ACHAFALAYA BAY
Atchafalaya R.
Franklin
New Iberia
St Martins
Donaldsonville
Baton Rouge
St Francisville
Woodville
NATCHEZ
Washington
Franklin
Concordia
Warrenton
Palmyra
Hamilton
Gibsonport
Bruinsburg
JACKSON
Pearl R.
Monticello
Liberty
Holmesburg
New Columbia
Winchester
Greene C.H.
Pascagoula R.
MOBILE
Madisonville
Covington
Washington CH.
LAKE PONTCHARTRAIN
LAKE BORGNE
NEW ORLEANS
Chandeleur Isles
Barataria Bay
Timballier Bay
B. la Fourche
Fort St Philip
MISSISSIPPI R.
Balize
Big Black R.
Sparta
Walnut Hill
Brashear's
Pickensville
Doak's
Yakonnee
Koonsha
Old Agency
Coolidge
Westville
Mc Clare
Hays
Cross R.
Leaf R.
Red Cr.
French T.
Shields boro
Pascagoula B.
Lake Marian
Woodville
Cantrels Ch.
B. Quarre Ch.
Red Ch.
Barataria L.
St Gabriels
Hampton
Forlin
Irwin
Galvez T.
Springfield
St Helena CH.
Spillers
X Roads
Fords
Waterholes
Lattimore
Elysian Fields
White Apple
Loftus Heights
Avoyelles CH.
Pt Coupee
Mc Daniels
Sweatz
Coshatta Inds
Indian V.
Wikoff
B. Cane
Lewis
Ocatahoota
Lovelace
Hut
Ferry
Little R.
Salt Licks
Indian Vil.
Campte
Prudhomme
Grubb
Tulins
Sotos
Bertrand
Wallace
B. Datache
Bodcau
Coshatta Vil
Hamilton's
B. Boruff
B. Macon
Greenville
Inn
Wilford
Langford
Williams
Longitude West 15 from Washington 14
16
13
31
30
32
J. Knight Sc.

body of water itself only a dilatation of the channel, as the streams are aggregated in descending from their original source. Lakes Huron, Erie, Michigan, and Ontario, and even Lake Superior, differ in nothing but extent, comparatively, from those of St. Francis and St. Louis in the St. Lawrence; from Lakes George and Champlain in the Richelieu; from Cassina and Pepin in the Mississippi; or from Lake Leman in the Rhone. The smallest brook presents all the features of the largest river. Where the plain has too little declination to admit direct descent, a pond or lake is formed; and again, where the descent becomes rapid, a flowing stream is the effect, and an effect in direct excess in proportion to the actual declination of the plain.

From such simple principles arise all the variety of feature conceivable, from the smallest pool to the expanded bosom of Lake Superior; and from the slowest perceptible current to the most impetuous cataract. On these sound data depends the philosophy of rivers. Closely examined, all streams, whatever may be their size, will be found composed of chains, whose links are themselves alternately lakes and cataracts, but it is the excess in the dilations of the St. Lawrence, and their moderate extent in the Mississippi, which so strongly contrast those two great rivers.

On true geographical principles, the Mississippi basin, vast as it is, can only be considered as a section of that system of rivers which flow into the Gulf of Mexico, and regard that inland sea as their common recipient. It is very remarkable that if every stream, great and small, which enters this gulf, from Cape Sable of Florida to Point Gorda of Yucatan, were supposed to be continued in the line of their course, they would unite with each other in a common estuary, not far outside of the centre of the gulf. But from the great superiority in quantity of water and of surface drained by the Mississippi,

that river well deserves to give name to the system of which it forms so conspicuous a part. I, therefore, in proceeding to sketch the great central basin, include with the Mississippi those minor rivers which enter the Gulf of Mexico in the United States.

If we examine a map of North America, we at once perceive that the great basin of the Mississippi is really only a part of a much more extensive depression, which has its oceanic termination S. in the Gulf of Mexico, and N. in Hudson's bay. This great central valley of the continent rises from the actual channel of the lower Mississippi by two unequal inclined planes; the eastern plane, having its highest line of elevation in the dividing ridge between the Atlantic and Mississippi sources; whilst on the west, the opposing plane rises by a much slower acclivity to the line of separation between the western confluents of the Mississippi and those of the Pacific ocean.

The Appalachian system does not constitute the dividing ridge between the rivers which flow from or towards its vallies; and, from what we actually know concerning the Chippewayan system, there are strong reasons to believe that similar to the Appalachian, the range of the chains of the former is oblique to that of its river vallies.

When treating of the St. Lawrence basin, it has been seen that no particular elevation of either mountain or hills, serves to form a demarcation between its southern sources and those of the Mississippi; on the contrary, the waters of southern Michigan are at some seasons nearly on a level, and mingle with those of Illinois, flowing into the Mississippi. The preceding remark may be farther extended, and applied to the immense inflected line, of upwards of two thousand miles, from the sources of the Susquehanna, Genessee, and Allegany, to those of Saskasawin of Hudson's bay, Maria's river of Missouri, and Clark's river of Columbia. The latter line may be

considered as that by which the slope of the Mississippi basin declines from those of the St. Lawrence and Hudson basins, and entirely destitute of mountains, though exceeding in length the curve line of Europe, extending from the Carpathian to the Ural systems, and which separates the sources of the streams which flow into the Black and Caspian, from those which enter the Baltic and White seas.

We may therefore consider the basin of the Mississippi as the southern declination of the great central valley of North America; and as limited east, by the table land, and not by the actual chains of the Appalachian system, and on the west, in a similar manner, terminated by the table land, and not by the chains of the Chippewayan.

On the northern boundary, the actual separation of source is in many places undefined by nature, and the summit level so completely a part of the surface of a sphere, that the waters flow both ways. This circumstance we have found to be the case near the southern termination of Michigan lake, and between St. Louis river of lake Superior and the Ouisconsin branch of Mississippi. It is evident from the preceding data that lake Michigan, Illinois river, and the Mississippi river below the mouth of the Illinois, are parts of the lower depression of the central valley of North America, and that a barrier of very little elevation above Niagara, would turn the entire discharge of the higher sub-basin of the St.Lawrence into the Illinois, and of course into the basin of the Mississippi. This has been supposed by some observers to have been the case; a more correct geographical knowledge may yet decide this curious problem in physical geography.* In the existing state of things

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* Might not lake Erie have formerly discharged itself by the Tonnewanta valley, into the Genessee river? It is, however, believed by some that this lake formerly discharged itself by the Chicago creek and Illinois rivers into

it will demand comparatively but a limited exertion of human power to open an uninterrupted water communication between lake Michigan and Illinois river, and insulate all that part of the territory of the United States, and adjacent parts of Cabotia, which are included between the St. Lawrence basin, the Atlantic ocean, Gulf of Mexico, and Mississippi river.

The great surface included under this head, the imperfect state of geographical knowledge respecting many of its sections, and the brevity of this view, all combine to preclude so detailed a notice of the minor parts, as has been given in respect to the Atlantic slope; but there are peculiarities in the periodical fluctuations of the rivers of the central basin which demand the more attention because the laws which govern the annual overflow of the main recipient are but imperfectly understood.

The most south-western stream of the United States is the Sabine. This river has its source in the province of Texas, about N. lat. 32° 30′. With an elliptical curve to the east, the general course of the Sabine is nearly south. At N. lat. 30° 10′, it emerges from a dense forest into open plains of grass and marsh, through which it flows by an excessively winding channel, to N. lat. 30°, where it dilates into a shallow lake of 30 miles in length, and from three to five miles wide; which, at its lower extremity, again contracts into a river of about 200 yards wide, and discharges into the Gulf of Mexico at N. lat. 29° 28′, long. W. C. 17° 05′ W. The country from which the sources of Sabine arise is rolling or rather moderately hilly, but eminences of every kind subside as the stream quits the forest, and in

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the gulf of Mexico, before the supposed barrier at Lewiston was broken down.—*Clinton's Introductory Discourse before the L. & P. S., N. Y.*, note 7, p. 51. David Longworth, 1815.

the prairies and marshes towards the sea coast, one undeviating level spreads its monotonous bosom.

This river affords no navigable facility worthy notice; it has not in ordinary tides above three feet water on its bar, nor has its inland lake or bay above four or five feet, and near the shores still less depth. I navigated it with three assistants in a large pirogue, drawing about one foot water, and was very seldom able to reach the shore without dragging our slight vessel.

The Calcasiu is the next stream which follows the Sabine to the eastward. The former rises in the angle between the latter and Red river, at N. lat. 31° 30′. Curving in a singular manner alike, the Sabine and Calcasiu, from the sources of the latter to its mouth, flow very nearly parallel to each other, distant about 35 miles; and similar in their features, the latter, like the former, emerges from the same forest into open prairies and marshes, expands into a lake, and again contracts into a river before reaching the Gulf of Mexico, into which it is discharged at N. lat. 29° 32′, long. 16° 23′ W. The resemblance between the two rivers is extended to their respective rank as navigable channels; the depth either on the outer bar or lakes, is remarkably similar.

Following the coast of the Gulf of Mexico about twelve miles eastward from the mouth of Calcasiu, is found that of the Mermentau. The triangle made by the Delta of the Mississippi, the shores of the Gulf, and the Sabine, has its base along the Gulf, perpendicular along the Sabine, and hypothenuse along the Delta, and consequently, the rivers rising on the triangle have more contracted courses, advancing from the basin of the Sabine towards the outlet of the Mississippi. The Mermentau is truly a river of Opelousas prairies, rising on the triangle we have sketched, at N. lat. 30° 53′, and, draining the centre of Opelousas by a number of branches,

flows by a general course of S. S. W., opens like the Sabine and Calcasiu, into a lake, and again contracts into a river, which falls into the Gulf of Mexico at N. lat. 29° 32′, long. 16° W. With other traits of resemblance, the Mermentau partakes with the Sabine and Calcasiu in a defective navigation.

Those three streams are so perfectly similar, and so nearly of a width at their respective mouths, that it is difficult to distinguish them asunder. There is, however, one certain landmark to point out the Mermentau from the two others. The live-oak, *Quercus sempervirens,* is plentiful in small clusters along its shores, and in little clumps spread over the adjacent marshes; but upon the Calcasiu and Sabine this tree is utterly wanting. This fact in vegetable physiology, I can vouch from actual observation. When I entered the Calcasiu, I thought myself in the Mermentau, and looked in vain for the live-oak tree, which I had previously and truly been told abounded near the latter. In a careful examination along both the Sabine and Calcasiu I did not detect a single stem of this valuable tree, so very plentiful on those streams more eastward. The cause of this phenomenon may be accounted for by due attention to the elements in Chapter X. of this view.

From the outlet of the Mermentau, a distance of about 60 miles is altogether unbroken by a single stream originating in the solid prairie and crossing the marsh. This inaccessible line of coast is followed by the Vermillion, a fine, but small river, rising in Opelousas, but flowing through Attacapas into the Gulf of Mexico. The source of the Vermillion is near the village of St. Landre, the seat of justice of Opelousas, at N. lat. 30° 31′, and with a general southern course of about 80 miles, falls into a large bay, which again opens by several passes into the Gulf of Mexico at N. lat. 29° 35′. Though something more navigable than the small rivers we


PART of
LOUISIANA;
Delta of the Mississippi.
Miles
5 10 20 30 40
St. Francisville
S.Helena C.H.
Amite R.
Tangipao R.
Baton Rouge
L. Maurepas
Madisonville
Iberville R.
Galvezton
New R.
LAKE
PONTCHARTRAIN
Pearl R.
LAKE
BORGNE
Donaldsonville
NEW ORLEANS
English Turn
CHANDELEUR
BAY
Opelousas
Courtableau R.
Raft
Atchafalaya R.
St. Martins
Vermillion R.
New Iberia
B. Teche
L. Chetimaches
INUNDATED
L. Verret
L. Palourde
Quacha L.
MARSH
Franklin
Cote Blanche B.
ATCHAFALAYA
BAY
B. la Fourche
Terre Bonne B.
Barataria Bay
Mississippi R.
F. S. Philip
Balize
MARSH
GULF OF MEXICO
Longitude West of Washington.
15
14
13
30
29

have already noticed as entering the Mexican gulf west of that stream, the Vermillion will not admit vessels of above 5 feet draught. The lands along its banks above the sea marsh are of excellent quality, and as low as the 30th degree of N. lat. produce sugar cane; cotton is, however, the staple commodity generally cultivated.

The Teche, a stream of superior magnitude and length of course to the Vermillion, heads in the same part of Opelousas, but as the latter mingles with the Atchafalaya, the Delta of the Mississippi succeeds to the former.

The Atchafalaya* is the upper mouth of the Mississippi on the right, and leaves the main stream at N. lat. 31°, long. 14° 47′ W. Where this outlet leaves the Mississippi, the latter is a fraction above half a mile wide, and the former 110 yards. It is only in seasons of high water that a heavy volume flows down the Atchafalaya. I have seen the current in fact flowing out of that channel into the Mississippi, but when the latter is at its extreme height, the mass of water drawn down this great outlet is enormous, and for five or six miles, the current is excessively strong, but abates as the river approaches the interior overflowed plains. I have denominated this inundated tract "plains," to distinguish it from the sea marsh. These two kinds of soil, though contiguous in Louisiana, and in many other parts of the sea border of the United States, are radically distinct. The periodically inundated tracts along the Mississippi, are also very erroneously called *swamps*. So far from being swamps,

* A-tcha-fa-lay-a, as the Indians pronounce this word, giving each syllable with equal accent, and with the sharp *a*, as in bat. It is in fact a sentence signifying "*Lost water*," and when properly pronounced is an elegant, and when understood, a very descriptive name.

in the true meaning of that term, the low and flat lands submerged annually by the surplus waters of this immense river, are, when left dry for some weeks, excessively solid land, and in a state of nature, covered with very dense forests. In point of soil the high prairies are similar to the inundated and wooded lowlands; but the marshes near the sea, still more uniform in their surface than either the high prairie or inundated forest land, are liable to diurnal flow of the tides, and are real swamps, and, except by the streams, utterly impassable by man.

The Atchafalaya in its course, and including its confluents, drains within a comparatively confined area a very great variety of soil and surface. After leaving the Mississippi, this stream flows south-west 5 miles, and thence turns to south, which latter course, with great partial windings, is maintained 30 miles, to the influx from the north-west of the Courtableau.

The Courtableau is a singular stream; its two remote sources, the Crocodile and Boeuf, rise in the hilly pine forests, between Red river and the head of Calcasiu, about N. lat. 31° 20′. Flowing south-east, and nearly parallel, 65 miles, they unite about 8 miles a little east of north from the village of St. Landré. The lower part of the channel of the Crocodile passes along the verge of the prairies of Opelousas, whilst its confluent, the Boeuf, ranges along the western margin of the great forest-overflow of Red and Atchafalaya rivers; below their junction the united stream, under the name of Courtableau, maintains the original course of south-east 20 miles to its junction with the Atchafalaya. Within 5 or 6 miles from St. Landré, this really important though humble stream, opens a glimpse of the wide spread prairies, and again plunges into the deeply entangled woods whose roots are annually bathed with the waters of the Mississippi. The Courtableau is the

channel of intercommunication between the higher parts of Opelousas and the Mississippi.

Below the Courtableau, the Atchafalaya, through a maze of interlocking outlets and inlets, turns to S. S. E. about 20 miles, to the outlet into Lake Chetimaches. Turning thence nearly due east 15 miles, receives the Plaquemine outlet from the Mississippi.

The Plaquemine is one of the mouths of the Mississippi, and except in size, is otherwise of the same nature with the Atchafalaya itself. The former issues from the main stream about 20 miles below Baton Rogue, and 6 below the Iberville. It is only at high flood that any water flows into the Plaquemine; the channel is narrow and the current excessively rapid, but, similar to that of the outlet of the Atchafalaya, mitigates approaching the interior low grounds, and becomes moderate near its junction with the latter, six miles in a direct line from the Mississippi.

Having received the Plaquemine, the Atchafalaya winds to a little east of south, 30 miles to its ingress into a large bay of the same name. At 20 miles above its mouth the Teche enters from the north-west.

The Teche rises in the northern prairies of Opelousas, at N. lat. 30° 40′, and flowing south-east 30 miles, between the Courtableau and Vermillion, enters Attacapas. At the point of entrance into the latter, an inlet from the Vermillion unites with it, below which the Teche assumes the form of a river, and continuing S. E. 30 miles to New Iberia, meets the tide at N. lat. 30° 02′, and inflecting to S. E. by E. widens from about 30 to 100 yards, and deepens from 5 to 30 or 40 feet, and flowing 90 miles, joins the Atchafalaya.

The entire length of the Teche, by comparative courses, is about 150 miles, but following the windings of the stream at least 200; but a circumstance

of peculiar interest in the geography of this river is the fact, that in all its range in Attacapas, of upwards of 120 miles comparative course, it receives no tributary branch. The banks rise by gentle acclivity, to 35 or 40 feet, and decline from the water 40 or 50 yards, and similar to those of the Mississippi, rise above the adjacent plains, and have every appearance of having once been overflowed periodically, and of having contained a much larger volume of water than now passes down the channel at any season of the year. If a map of the country drained by the Teche was drawn without that stream and presented to a person unacquainted with its individual geography, he would place a dividing ridge precisely along its channel; such, however, is the intricacy of the topography of the western part of the Delta of the Mississippi, that I have inserted the enclosed sketch, in order to compensate for the defect of verbal description. The real distinction between the prairie, sea-marsh, and inundated forest land, is also exhibited. The Atchafalaya is, however, drawn on a much too large comparative scale with the Mississippi.

New Iberia, at the head of tide water in the Teche, is a port of entry, and vessels frequently clear out from thence, but the general commercial communication is with the city of New Orleans, through the Atchafalaya, Plaquemine and Mississippi; or from the lower Teche, through lakes Palourde and Veret and their connecting inlets, and the Lafourche and Mississippi rivers.

Boats from 15 to 60 tons are conveyed from New Orleans by the Plaquemine into the Atchafalaya. Those destined for the lower part of Attacapas descend the latter river, and enter their points of destination by the Teche. Those bound to the central parts of Attacapas, ascend the Atchafalaya about 20 miles, and are thence transported by an outlet and Lake Chetemaches, to the Fause Point landing.

Here is a portage of 10 or 12 miles to St. Martinsville, seat of justice for the parish of St. Martins, or Upper Attacapas. Vessels destined for the higher and central parts of Opelousas ascend the Atchafalaya to the mouth of Courtableau, and thence by the latter stream to Lemell's Landing, 6 miles, or into Bayou Carron, 4 miles from the village of St. Landré.

The much misunderstood phenomenon in the Atchafalaya, "*The Raft*," is in reality the *debris* thrown out of the Mississippi, which at some unknown period was collected in a mass at one of the abrupt bends in the narrow and very tortuous channel of the Atchafalaya, and augmented by future accessions of floating timber, obstructed the navigation between the points marked on the accompanying sketch. I surveyed the Atchafalaya from its outlet from the Mississippi to its junction with Plaquemine, and examined the coast, in 1808, 1809, and 1810. At those epocha, the Raft began about 26 miles by the channel from the Mississippi, and occurred in fragments as low as within 5 miles above the Courtableau. About 1774, a small mass broke from the main body, and lodged again about half a mile below the mouth of Courtableau, and continues yet to embarrass the navigation of both streams, though partially removed by the inhabitants of Opelousas.

The Raft is by no means stationary; several breaks were made by the rising waters in my own presence; but interlaced as the trees are by their branches and pressure, when a breach does occur, it is by immense masses, which soon again lodge. The channel varies very little from about 110 yards wide from the Mississippi to the Teche, and above the Courtableau the bends are extremely abrupt and winding, presenting in reality a miniature picture of the Mississippi.

The ordinary tides of the Gulf of Mexico are so

much influenced by variable winds, that the flow inland cannot be marked to any given point in most of the channels of Louisiana; but left to its own natural swell, the spring tides, when the interior waters are low, ascend in the Atchafalaya above the lower Raft, and in the Courtableau, to near the lower Opelousas landing. In the Plaquemine and Iberville, the spring tides, in the foregoing stated condition of the rivers, rise to within 4 or 5 miles from the Mississippi. I particularly notice these circumstances in the tides, as they tend so strongly to illustrate the real and relative elevation of this country. The spring tides of the Gulf of Mexico, unaided by wind, do not exceed 3 feet, and consequently from the approach of the earth in and near the Delta of the Mississippi to the curve of the sphere, a rise so moderate is perceptible to a distance inland, which from a superficial view of the external features, would be totally unexpected. Similar inductions may again be drawn from the rise of the tide in the Teche, Vermillion, and the branches of Mermentau; and I have no doubt also in the Calcasiu and Sabine, but when I examined the two latter rivers, they were greatly swollen by winter rains, and north and north-west winds prevailed nearly the whole period of my visit to their channels. The other rivers from which my examples have been drawn, I had repeated opportunities to examine leisurely at nearly all seasons of the year.

I may dismiss the subject of the Atchafalaya, by observing that the surface on both sides of its channel is the lowest ground, the sea marshes excepted, in the Delta, and with very partial exceptions, is liable to annual and deep submersion. The reader ought, however, to cautiously distinguish between the relative elevation of the surface near the rivers, and the actual bottom of the streams. It will be shewn in the sequel, that the channel of the Mississippi is the lowest valley of the country through

which it flows, but it is evident, from the enclosed sketch, that the surplus water which *falls*, if I may be permitted the expression, out of the surcharged channel of the main stream, is carried with great velocity backwards towards the deep recesses of the overflowed lands near the Atchafalaya. The overflow of the latter is again slightly, and but slightly, augmented by the Raft. As the timber rises and falls with the flood in the river, it cannot greatly impede the descent of the water. In fact the most operative cause of the annual inundation of the Delta, is evident from the data given to be the very little inclination of the plain from the interior towards the sea. The water therefore accumulates in the Atchafalaya valley, and if the forest was removed would give to that region in the time of inundation the aspect of a lake.

Another powerful cause of inundation in the Atchafalaya valley is, that a line of comparative high alluvial land is protruded to the latter river by the Teche, and with the mere intervention of the main channel, is met by another alluvial line of a similar nature from the La Fourche. Thus the whole body of water drained in spring floods from the Mississippi by the Atchafalaya, and which is also brought down by the Courtableau, Teche, and smaller streams from Opelousas and Attacapas, can only escape by the former, opposite the mouth of the Teche.

It may be asked, how high does the tide rise in the Mississippi itself? Such is the weight of the volume of water in the channel of the Mississippi, even when lowest, that the tide has never been known to ascend to New Orleans, though perceptible near that river far above that city. The cause of this apparent anomaly is, that the surface of the water in the Mississippi, at its most depressed stages, rises above that of the lakes and rivers in its vicinity.

Advancing eastward from the Atchafalaya along the shores of the Mexican Gulf, the La Fourche is the first inlet of consequence in a commercial point of view. In the intermediate distance of 60 miles, several small streams enter the Gulf, but from their very abridged length of course, are unimportant.

The La Fourche (*the fork*), as its name imports, is a mouth of the Mississippi, similar to the Atchafalaya, Iberville, and Plaquemine, and the third on the right in descending. The outlet of the La Fourche, 40 or 50 yards wide, is at N. lat. 30° 06′, long. 14° 01′ W. After leaving the Mississippi, the course of the La Fourche is S. E. by S. 90 miles, to its egress into the Gulf of Mexico, at N. lat. 29° 05′, long. 13° 30′ W. The La Fourche is one of the most important inlets of Louisiana, having 9 feet water on its bar, and admitting vessels drawing 4 or 5 feet to within 30 miles of its efflux; but contrary to those of the Atchafalaya, the banks of the La Fourche are high and arable for a distance of 60 or 70 miles from the Mississippi. Cotton and sugar are the principal staples. Much of the produce and merchandize of the settlements along its banks are transported to and from New Orleans by the Mississippi.

From the Sabine to the Vermillion, the coast of Louisiana stretches a very little north of east, but at the Vermillion outlet bends to S. E. by E. upwards of 100 miles, forming an obtuse cape which reaches to near the 29th degree of latitude. The interior of this cape is formed by the high lands between the Atchafalaya and La Fourche, and by the high alluvial banks of the latter. I call those embankments high land, it may be noticed, by mere comparison with surface still lower, and subject to annual inundation. In the present case, the alluvial lines being above any except very extraordinary inundations, shelter a triangular body of land, now forming the

parish of Terre Bonne. In this new parish, a number of small rivers or bayous rise, and flow southward into the Gulf of Mexico. Not being liable to the inroads of the Mississippi overflow, the banks are arable, though no one of their channels is of such width and depth as to admit vessels of any draught worthy of observation in a navigable point of view. It is the most southern tract of cultivatable soil in Louisiana of any considerable area, and will, on every spot which admits agricultural operations, produce sugar cane and rice. Here exists the only prairie, in the real meaning of that term, to be found in Louisiana east from the Atchafalaya.

The La Fourche is followed by an intricate network of lakes and bayous, which are mostly discharged into Barrataria bay. Having an open outlet to the sea, the overflow of the tract east from La Fourche, is neither so deep or permanent as that of the Atchafalaya valley above the mouth of Teche; but in the former case the real sea-marsh prevails much farther inland, and reaches to the vicinity of the Mississippi, south from its great bend near New Orleans. Very little arable soil exists in all the large triangle formed by the Mississippi river, Gulf of Mexico, and La Fourche river. The inlets of Barrataria bay are only navigable with small craft.

The coast at the outlet of La Fourche bends to the north-east, and by a bold circular sweep, first in that direction, then east, and finally south-east, forms an open elliptical bay, between the outlets of La Fourche and the south-west pass of the Mississippi. The interior of this bay terminates in Barrataria lake, nearly due south from New Orleans.

We now approach to that very remarkable salient point formed by the main volume and real mouths of the Mississippi. This vast river stands alone in the manner of its egress. If, like the Nile, Ganges, Blue and Yellow rivers, the Orinoco, the Rhine and some others, the Mississippi divided its

volume into various outlets far in the interior, there would be nothing peculiar in its Delta; but as the Atchafalaya, Iberville, Plaquemine, and La Fourche are mere drains, and, accurately speaking, not real mouths, we may consider the entire volume as continuous over the main body of the Delta, and upwards of 30 miles into the Gulf of Mexico. The latter circumstance has no parallel in physical geography, even on a small scale. If the protrusion we have noticed is supposed removed, there would remain a tolerable near resemblance between the Delta of the Nile and that of the Mississippi, but the long narrow cape destroys the fancied resemblance, and leaves the Mississippi to form at its estuary a distinctive picture.

This noble river has three main and three lesser passes or outlets, which are marked on the accompanying sketch. The most frequented is the S. E. pass, with 12 feet water at ordinary tides. The S. W. pass has, in similar circumstances, nearly a like depth with that of the S. E. The other passes, that of the south, west, north-east, and La Loutre, have from 5 to 8 feet, but are but little frequented. The shallow water is only on the bars of either pass. I sounded both the main passes and that of the west, in April, 1818, and found deep water immediately outside of each. The depth increased more gradually within the channels, but in either, the largest ships of war could ride within one mile of the bar.

With the outlet of the Mississippi, the coast turns to a north course of 70 miles, with a curve to the west, to Pass au Marianne. The latter is the main outlet into the Gulf of Mexico, of a chain of lakes and inlets, which commences near the Mississippi, 50 miles to the N. W. by W. from New Orleans. The hilly and comparatively elevated country of the state of Mississippi, extends into Louisiana, gradually depressing, and finally terminates in moderately high bluffs or banks, near the Iberville, about 16

miles south from Baton Rouge. If we turn to the map of the Mississippi below the mouth of Ohio, we perceive that the channel of that river follows the eastern bluffs, and that the great body of overflowed surface is west from the stream, between the mouth of the Ohio and Baton Rouge: the windings of the Mississippi, in many places, reach the base of the eastern hills, but in no one instance do they approach those of the west. The cause of this phenomenon will be exposed in another part of this view.

The Iberville, or upper drain of the Mississippi, leaves the main volume near the termination of the eastern high land, and following its base N. E. by E. 15 miles, receives the Amite from the north, and inflecting to the east, by a very winding channel of 20 miles comparative course, opens into Lake Maurepas. The latter is a circular sheet of water about 8 miles each way, receiving from the north the Tickfoha, a small river rising in the state of Mississippi.

The pass of Manchac carries the waters of Lake Maurepas into the much more extensive Lake Pontchartrain, an ellipsis 20 by 32 miles, and a very general depth of from 18 to 20 feet. The longer diameter of Lake Pontchartrain is nearly from W. to E., and parallel to the opposing range of the Mississippi, in the vicinity of New Orleans, leaving an intermediate slip of low marshy, and mostly unwooded plain, of from 5 to 8 miles wide. Into the northern side of Pontchartrain is discharged the rivers Tangipao, and Chifuncte, with some minor creeks, and the entire mass of waters are discharged from the south-east curve of the lake by two passes, that of the Rigolets, and that of Chef Menteur, both again discharged into Lake Borgne.

Lake Borgne is, though denominated a lake, really a bay of the Gulf of Mexico, or a continuation westward of Pascagoula sound. North-east from

New Orleans, extends a peninsula, which is opposed by another of nearly similar extent, stretching to the south-west. The former bounded by Chef-Menteur, and the latter by the Rigolets, are separated by a marshy island between the two passes; the whole forming the disjointed isthmus, which spreads between Lakes Pontchartrain and Borgne, from 6 to 8 miles in width.

With about 9 feet water at each extremity, the Rigolets receives from the north, at near its mid-channel, a considerable stream, Pearl river, rising in the state of Mississippi at N. lat. 33°, long. 12° 30′ W. Interlocking sources with Big Black and Pascagoula rivers, the Pearl flows S. W. about 80, reaching to within 45 miles from the Mississippi at the mouth of Big Black, and thence inflecting to S. S. E. 160 miles, enters the Rigolets, after an entire comparative course of 240 miles. On strict geographical principles, from its very superior length and volume, and from the position of its estuary, Amite, Tickfoha, Tangipao, and Chifuncte, with the discharge of Lake Pontchartrain, are branches of the Pearl, and confer upon the latter the dignity of giving name to the basin in which it is the principal stream. Adopting this distinction, the basin of the Pearl occupies that part of the northern slope of the Gulf of Mexico, between the immediate confluents of Mississippi and those of Pascagoula.

Geographically the basin of the Pearl extends from N. lat. 30° to 33°, and in long. from 12° to 14° 17′ W. It will at once be seen by reference to the map of the Delta, that in the Pearl basin I have included the minor streams, having their sources near the very margin of the Mississippi, from Iberville outlet, to Bayou St. John, draining the streets of New Orleans. A single glance on the map of this region will exhibit the correctness of this arrangement of parts. In extent, the Pearl basin stretches 220 miles from S. to N., but with very unequal width. The

higher part of the basin confined to the mere valley of the Pearl for 120 miles, does not exceed a mean width of 30, or an area of 3600 square miles; but nearly E. from Natchez, at N. lat. 31° 30′, the basin widens rapidly, and spreads in form of a trapezium, with its longest side 120 miles from Biloxi bay to the efflux of the Iberville, and perpendicular 120, with an area of about 9600 square miles; which latter surface added to the higher extension of 3600, gives an entire superficies of 13,200 square miles.

Though the base of the basin of the Pearl, forms a decided connexion with the Delta of the Mississippi, the far greater part is composed of a soil and formation essentially distinct from recent alluvion, the component of the Delta. On the north side of the chain of lakes and inlets between the efflux of the Iberville and Biloxi bay, the surface rises for 8 or 10 miles, by a very gentle acclivity, but this slowly rising inclined plain is imperceptibly succeeded by hills; the surface becomes broken, and the *channels* of the streams more shallow, though their *vallies* sink much more comparatively deep; except near the water courses, pitch pine, *pinus strobus*, is the common timber. As the region of which the basin of Pearl forms a part, is an important and peculiar section of the United States, some amplification in this place may not be deemed irrelevant, and particularly as the observations, without much violence done to correct theory, may be extended to the larger basins of Pascagoula, Mobile, and Appalachicola.

Extending our views from Baton Rouge, or perhaps more correctly from the efflux of Iberville, to the mouth of Ohio, stretches a buttress, broken by numerous streams, and the projections of which, worn by the abrasion of the Mississippi, are known by the name of Bluffs. These Bluffs are the mere advanced points of the comparatively more elevated

country east of the Mississippi, above the overflowed tracts immediately west from that stream. The elevation of the Bluffs varies, but may be considered as exceeding 100 feet above the alluvial plains near the Mississippi, and the interior country rises by a moderate acclivity.

The excessively broken aspect of the country for 15 or 20 miles from the Mississippi, is calculated to deceive a casual observer, and induce him to exaggerate the actual height of the general surface, but more careful and continued observation discloses the real nature of the *ten thousand hills,* which lie scattered in wild confusion seeming to mock all arrangement. Advancing eastward, it is soon perceived that the hills near the streams are the remains left of a once extended terrace, now furrowed by innumerable channels. The soil of the bluff, or hilly tract, is almost uniformly productive, but as the hills subside into plains, the soil deteriorates, and the mingled forests of oak, sweet gum, poplar, liriodendron tulipifera, hickory of various species, and some pine, are followed by the almost exclusive prevalence of the latter tree.

It would not be much risk to estimate the pine tract as occupying two-thirds of all the superficies from the Atlantic ocean to the Sabine, along a zone from the 30th to the 33d degree N. lat. This species of soil, deriving its title from the most abundant timber it produces, terminates in some places abruptly, but in general gradually merges into what is known locally by the designation of interval land; a kind of soil partaking of an intermediate quality between actual alluvion and pine-land. Correctly speaking, the superstratum of the bluffs is a real interval land, and for variety of vegetable productions, highly valuable.

Before proceeding to delineate the residue of the coast of the Gulf of Mexico, from the Delta of the Mississippi to Florida point, we may pause and cast

a summary glance over that region of recent creation, the coast of Louisiana. The first sweep of vision along the entire line of sea coast from the Sabine to the mouth of the Pearl, spreads before us a marsh of upwards of 400 miles, interrupted only by the water courses. On a near approach to their line of separation, the waves of the Gulf can be still, with some difficulty, distinguished from the very little more elevated green of the marshes. A few shrubs and clumps of trees are perceived at a distance in solitary groups, to mark the commencement of a more majestic vegetation. To the northwest, along the Teche, Vermillion, Mermentau, Calcasiu, and Sabine, beyond the marshes, and with a moderately greater elevation, immense prairies would be seen to extend, and most elegantly ornamented by the serpentine lines of forest, curving with the concealed channels. Still farther inland, and on all sides, beyond the marshes and prairies, the perspective would be darkened by dense and continuous forests, through which would be seen the tortuous Mississippi rolling, with solemn and irresistible majesty, towards its only successful rival the Gulf of Mexico.

Suppose for a moment, that stream at its utmost elevation; suppose the wide recesses we have described to be gorged to overflowing, and then imagine the forest removed from the inundated plains, and what a picture would open to the eye. From the prairies and marshes of Attacapas and Opelousas, to the bluffs of the Mississippi, the water courses would vanish, and before us would spread a vast lake of upwards of 100 miles in length, with from 10 to 40 miles in width. The very narrow alluvial borders along the streams would, like the wooded lines over the prairies, decorate and embellish, without greatly diminishing the expanse of waters. On the east, the limit of this annually recurring inland sea, would appear strongly defined, but

on the west, the demarcation with the prairies and marshes, would be faint and indefinite. But of all the wonders of this annual deluge, the most curious is certainly the almost exact resemblance, mere magnitude of volume only excepted, between the two bounding rivers, the Mississippi and Teche; and what is peculiarly worthy of notice, the latter river coasts, without either receiving or participating of the water contained in the adjacent lake.

From the preceding data, may be conceived the impenetrable nature of the Louisiana coast, except through the channels of the rivers. Even by those entrances, 12 feet is the deepest water which can be calculated on at all seasons, and that depth only in the Mississippi. Extremes in no instance can more effectually touch, than in the case before us. No walls of rock, however high and rude, could more completely oppose all approach, than do the low shores, shallow waters, and marshes of Louisiana.

I have in the preceding survey omitted a particular review of the outlet of the Mississippi itself, or of its course over the Delta, only as incidentally necessary to complete a notice of the minor streams. This apparent omission of what constitutes the primary object in a review of the sea-border of Louisiana, was an intentional postponement to the close of the article. The channel of the Mississippi is intimately connected, not alone with the Delta, but also with the basin generally, and can be more appropriately reserved to the close of the article. We therefore now resume our survey of the coast eastward from the Delta.

We have given a passing notice to a low flat and marshy peninsula, which projects to the N. E. from the lower part of the Delta. It is this peninsular flat, the isthmus between Lakes Pontchartrain and Borgne, and the southern coast of the state of Mississippi, which form that deep and shallow bay mis-named *Lake* Borgne, a parallelogram extending

40 miles from S. W. to N. E., with a mean width of 15 miles.

Lake Pontchartrain, the Rigolets, Lake Borgne, and below the latter, the Pass of Christian, Pascagoula sound, and Pass of Heron, form an interesting inland navigation into Mobile bay. This channel is formed by the main shore of Mississippi, and south-western Alabama, on the north; and a chain of long, low, sandy islands, stretching from the mouth of Mobile bay, in a western direction towards the Rigolets. These islets are, advancing from the west to east, the groups of Malheureux and Marianne, the solitary Cat island, Ship island, Dog island, Horn island, Petite Bois, and Dauphin island. In ordinary stages of the water, this coast passage cannot be made with vessels drawing above 5 feet water, as over the shoals of either Heron or Christian, that is about the common depth. Distance from New Orleans to Mobile bay by this inner passage, 100 miles; and 130, if extended to the city of Mobile.

This inland channel is again continued N. W. from New Orleans 125 miles, following the windings of Lake Pontchartrain, Pass of Manchac, Lake Maurepas, Amite and Iberville rivers, to the Mississippi, at the efflux of the latter outlet. Schooners, and other vessels of 5 feet draught, can be navigated to Galveztown, at the junction of the Iberville and Amite.

In every section of this chain of navigable rivers, lakes, inlets, and sounds, it has been shewn, that 18 feet water in Lake Pontchartrain is its deepest part. Some projects have been broached for making this line, the principal channel of internal navigation in the Delta; I trust I shall, however, demonstrate in the sequel of this article, that the heaviest ship of war that is now in the United States' navy, could be navigated from the Gulf of Mexico to New Orleans by the channel of the Mississippi, at greatly less expense than could a vessel of 10 feet draught be made

to float down the Iberville, Amite, Lake Maurepas, and Pontchartrain, to the mouth of Bayou St. John. I may now say *en passant*, that the former is practicable, the latter almost beyond human means.

In the eastern extension of the preceding channel, the only river worthy notice which it receives, is the Pascagoula, an unimportant stream, however, in a navigable point of view. It rises on the angle between the sources of the Pearl and the confluents of Tombigbee; flows south 120 miles under the name of Chickasawhay; where it is augmented by a large confluent from the north-west, Leaf river. Assuming below their junction the name of Pascagoula, continues south 50 miles, and falls into a sound of the same name, opposite Horn island, and receiving near its outlet, a considerable tributary, Dog river from the N. E.

The marshy coast of the Gulf of Mexico terminates with the Rigolets, and eastward of that inlet, the pine tract reaches the gulf, and that tree thence constitutes the prevailing timber along the sea coast of Mississippi, Alabama, and great part of Florida. At the mouth of the Pascagoula, pine forests extend from the margin of the sound. The few dwarf trees on the Sand islands opposite, are also pine. It was at this very spot, that I felt myself beyond the alluvial creation of the Mississippi. Examining the coast from the mouth of Pearl to that of Mobile, the shores seemed rather yielding to the waves than augmenting by any deposit carried inland by their means. West of the mouths of the Mississippi, as far as I have examined the coast, the *debris* brought down its surface are distributed in great abundance; eastward of the Delta, these fragments are no where found. These facts shew the course of the currents along the northern shores of the Gulf of Mexico, to be westward, and serve also to direct the approach of vessels to the entrance of the Mississippi.

Mobile bay is a fine triangular sheet of water of 30 miles in length and varying from 18 to 3 miles wide. The projection of Mobile point, and the position of Dauphin island, land-lock this bay. The main entrance with 16 feet water, winds between Dauphin island and the western cape of Mobile point, close upon the latter. Between Dauphin island and the main shore of Alabama, lies the Pass of Heron with 5 feet water. The depth over the main bar is maintained inland to about 5 miles below the city of Mobile, where another bar, or sand bank, with only 10 feet water, crosses the bay from W. to E.

Into Mobile bay is poured the river of the same name, the discharge of a triangular navigable basin of 37,120 square miles. The Mobile river is formed by two great branches, the Tombigbee from the north-west, and Alabama from the north-east.

The Tombigbee is formed by two branches; the Tuscaloosa (*Black Warrior*), and Tombigbee. The latter rises in the north-east angle of the state of Mississippi, in the country of the Chickisaws, at N. lat. 34° 40′, long. 12° 20′ W., the branches, however, rising with the small creeks of Tennessee, through 100 miles, interlocking westward with those of the Yazoo, or Tallahatcha, and eastward with those of the Sipsey or New river. Flowing by a general course, nearly south, 100 miles, the various branches having united, incline to a little E. of S., and enter the state of Alabama, at N. lat. 33° 16′, 5 miles below Columbus, the seat of justice for Monroe county, Mississippi. At this point the Tombigbee is already a navigable river, having drained a surface of at least 5000 square miles. Below the Alabama line 25 miles, the Sipsey or New river enters from the N. E., and the main stream, in a course S. S. E. of 50 miles, is again augmented by the still more important branch, the Tuscaloosa, after an entire comparative course of 170 miles; at N. lat. 32° 31′, long. 10° 58′ W. (*Tanner's map*).

It will be seen, when treating of the Tennessee, that in its curve through Alabama, it flows near the lower margin of the mountain valley. It is from this formation of the intermediate country, that the sources of the Mobile basin through upwards of 400 miles, circle round and approach the actual channel of Tennessee, within from 10 to 25 miles. The extreme north-eastern branch of the Tuscaloosa, rises at N. lat. 34° 20′, long. 9° 14′ W., and but little above 10 miles from the channel of Tennessee river, at the Great Bend, Decatur county, Tennessee, and about an equal distance from the Coosa, at the mouth of Will's river. Pursuing a south-west course 150 miles, receives numerous confluents from the north-west. The valley of Tuscaloosa is triangular; base 150, and perpendicular 56; mean width 28, and area 4200 square miles.

Below the junction of its two main branches, the Tombigbee, with a very winding channel, curves by an elliptical sweep to the west, but by a general course, but very little W. of S., 90 miles, to N. lat. 31° 09′, where it unites with the Alabama from the N. E. Between the mouths of the Tuscaloosa and Alabama, the Tombigbee receives no tributary above the size of a large creek, and its valley does not exceed a mean width of 35 miles, or contain an area above 3150 square miles: the entire valley, including that of Tuscaloosa, having a superficies of 13,350 square miles.

The Alabama is formed by two branches, the Coosa and Tallapoosa. The Coosa rises at N. lat. 35° 05′, long. 7° to 8° W., in the northern part of Georgia, interlocking sources with Tennessee, Hiwassee and Chatahooche rivers. The Etowah or extreme north-eastern branch, heads in the angle between the Hiwassee and Chestatee branch of Chatahooche, and flowing 35 miles a little east of south, and parallel to the Chestatee, bends thence west 30 miles, and thence S. S. W. 35 miles to N.

lat. 34°. Curving abruptly to the N. W. by W. 30 miles, receives the Oostenalah, and assumes the name of the Coosa.

The Oostenalah rises in Georgia, and at N. lat. 35° 05′, in the angle between the Tennessee and Etowah rivers, and falls but little short of the latter in volume, but both streams having their sources in the highest nucleus of the Appalachian mountains, are large and rapid rivers compared with their length of channel.

The Coosa, below the junction of its two constituent branches, flows west 8 miles and enters Alabama, near Fort Armstrong,* and inflecting to S. W. by W. about 35 miles, receives Will's creek on N. lat. 34°, long. 8° 05′ W. Bending to S. S. W. 75 miles to N. lat. 33°, again by a gentle curve turns to S. S. E. about 40, and thence S. W. 10 miles to its junction with the Tallapoosa, at N. lat. 32° 28′, long. 9° 22′ W., after an entire comparative course of near 300 miles.

From the circuitous windings of the Coosa, its valley is not more than two-thirds the length of its channel, or about 200 miles. Receiving no considerable branches, the mean width of the valley is only about 45 miles; area 9000 square miles.

The Tallapoosa rises in Georgia near the channel of the Etowah, and between the Chatahooche and Coosa, at N. lat. 34°, long. 8° W. Without receiving any considerable confluent in the intermediate distance, Tallapoosa enters Alabama, flows S. S. W. 120 miles, and receives the Tallassee creek from the east, and abruptly bending to the W. 25 miles, unites with the Coosa, and forms the Alabama, at the village of Coosawda, Autauga county, Alabama.

The valley of Tallapoosa is about 125 by 35 miles; area 4375 square miles: Extending from N. lat 32° to 34°.

* Tanner's Map.

From Coosawda, the Alabama flows by comparative courses a little S. of W. 50 miles, receives the Cahaba, a considerable confluent from the N., inflects to S. S. W., and continues that direction nearly 100 miles to its junction with the Tombigbee.

There is perhaps no other river in the United States in which the actual length of the channel and those of the comparative courses differ so much as in the Alabama. By its two general courses, one above and the other below the influx of the Cahaba, this river is about 150 miles in length; but if estimated along its banks it would exceed 100 above, and amount to near 200 below the Cahaba.

Including the valley of the Cahaba, that of the Alabama is of very irregular form, stretching from N. lat. 31° 04′ to 33° 47′, and containing by actual survey 8460 square miles.

Before their actual junction, some one or more small outlets partially unite the waters of Tombigbee and Alabama, and after uniting and losing their names in that of Mobile, the mass of water does not immediately intermingle in one bed, but penetrating the inundated intermediate flat by two main and numerous smaller channels, flows upwards of 30 miles before the whole is lost in Mobile bay; out of which it is again discharged around Dauphin island.

The valley of the Mobile proper is about 60 by 30 miles, or 1800 square miles, one-third at least occupied by the bay, leaving 1200 square miles for the two small slopes on each side of the bay and river.

Mobile basin, at its north-eastern extremity, is followed by that of Appalachicola, but these two basins receding from each other towards their respective estuaries, leave a comparatively small, but a very important, intermediate basin, having Pensacola for its principal entrance from the Gulf of Mexico. It has, however, two more bays of considerable extent, Santa Rosa and St. Andrews; and Perdido may be also considered a part, though de-

riving consequence merely as a political boundary between Florida and Alabama.

Pensacola bay is the estuary of several small creeks or rivers, and one stream, the Escambia, of considerable magnitude. The Escambia is formed by two very unequal branches, the Escambia proper and Connecuh. The Escambia is a mere creek, rising in Monroe county, Alabama, and flowing S. S. E. over Baldwin and Connech counties enters Florida, and falls into the Connecuh river, about 2 miles below the boundary between Alabama and Florida.

The Connecuh is a river of much greater magnitude than its confluent the Escambia. The latter rises in Alabama and in the angle between the Tallapoosa and Chatahooche rivers, at N. lat. 32° 10′, long. W. C. 8° 30′ W. Flowing thence 130 miles south-west enters Florida, and receiving the Escambia the united water assumes the latter name, and turning to a little E. of S. 25 miles, is lost in Escambia bay, the northern arm of Pensacola bay.

Pensacola bay, forming the deepest haven of the United States on the northern coast of the Gulf of Mexico, opens from that Gulf at N. lat. 30° 19′, long. 10° 18′ W. The entrance is about 8 miles S. S. W. from the city of Pensacola, and formed by the main channel and by Santa Rosa sound. The bay widens above Pensacola, and extending a little N. of E. 20 miles, terminates to the north in two deep sub-bays, Escambia and Yellow Water. The latter is the recipient of several creeks of little consequence, rising in the Pine woods, north-east from the city of Pensacola.

The surface of Pensacola basin, with the exception of a few confined strips along the streams, and some interval land, is a sterile pine forest, or open prairies of similar soil.

The depth on the bar 21, and in the harbour of Pensacola from 23 to 36 feet, admits vessels draw-

ing 20 feet water to enter safely. The bottom, both in the entrance and bay, is either a fine sand or mud. Like some harbours on the Atlantic coast, Pensacola stands indebted for its depth of water to the circumstance of not receiving any large river, the alluvion of which, if any such had existed, would, in the course of time, have changed it to a shallow waste.

One of those long, narrow, and low sand islands, so common on the Atlantic coast and on the shores of the Gulf of Mexico, extends from Pensacola 40 miles N. E. by E., to an entrance into a considerable bay, the Choctawhatchie. The sound within Santa Rosa island is like the island itself, narrow, and is also a mere elongated shallow, which, within its entrance, turns to east 25 miles, and receives from the north-east Choctaw river, a stream of about 80 miles comparative course, rising in Henry and Pike counties, Alabama. As a navigable basin Santa Rosa or Choctawhatchie bay is unimportant.

If due attention is paid to the philosophy of the seacoasts of the United States, no rational doubt can be entertained but that those elongated sand islands are mere bars, formed when the oceanic level stood above their surface. The coast of Louisiana, Alabama, and Florida, exhibit a constant succession of ridges with every appearance of islands, except being now joined to the continent. This formation of coast is in a particular manner observable west from the Delta, and again along the coast of Florida. The chain of islands, however, which we have seen stretching from the Rigolets to Mobile bay, is in reality one of those sea-bars, which is again continued in Mobile point, and broken by Perdido, reaches to Pensacola. Santa Rosa island perpetuates this chain, and beyond Santa Rosa inlet, inflecting to S. E. by E. 65 miles, is once more interrupted by St. Andrew's inlet.

St. Andrew's bay is the last advancing from the west, of the intermediate basins between Mobile and Appalachicola rivers, and is of little consequence as a navigable entrance. Unlike Mobile, Pensacola, Perdido, and Sta. Rosa, which all more or less incline to the north-east, St. Andrew's bay stretches to the north-west, almost insulating the sandy isthmus between Santa Rosa bay, Choctaw river, St. Andrew's bay itself, and the Gulf of Mexico.

Taken in its full extent, including the confluents of Perdido, Pensacola, Santa Rosa, and St. Andrew's, the Pensacola basin extends from the western sources of Perdido to the eastern bend of the Ekanfinna river 160 miles, with a mean breadth of 80 miles, area 12,800 square miles.

The sources of the Coosa river and those of the Chatahooche rise together in the northern part of Georgia, the latter being the principal confluent of the basin of the Appalachicola.

The Chatahooche river rises in the highest table land of the Appalachian system, at N. lat. 35°, long. 6° 20′ W., interlocking sources with those of the Coosa, Hiwassee, Tennessee, and Savannah rivers. The higher Chatahooche is formed by two branches, the Chestatee and Chatahooche proper. The former is the main stream, drawing its most remote sources from Habersham county, Georgia. Flowing west 25 and thence S. S. W. 75 miles, and crossing N. lat. 34°, the Chestatee receives from the north-east the Chatahooche. The latter, rising with the Chestatee and Savannah rivers, flows S. S. W. 70 miles, having only a mountain ridge between it and the higher branches of the Oconee and Oakmulgee branches of the Altamaha, and joins the Chestatee.

The Chatahooche, below the junction of its two constituent branches, flows S. S. W. 50 miles, and thence, with a slight elliptical curve to the west, pursues a general southern course of 200 miles to

its junction with Flint river, from the north-east. It is remarkable that in such a distance as 250 miles, from the junction of Chestatee and Chatahooche to the mouth of Flint, no tributary stream enters the main recipient above the size of a large creek, and the valley at its widest part does not exceed 50 miles, averaging perhaps 35 miles from its highest point. Entire length of this long vale about 320 miles; area 11,200 square miles.

Flint river rises in Henry, Fayette, and De Kalb counties, in Georgia, at N. lat. 33° 30′. Pursuing a southern course between the Chatahooche and Oakmulgee 130 miles, turns thence 80 miles S. W. to its junction with Chatahooche, after an entire comparative course of 210 miles. Similar to that of the Chatahooche, the Flint river valley is narrow, averaging a mean width of about 40 miles and with an area of 8400 square miles.

The united streams of Chatahooche and Flint assume the name of Appalachicola, which flowing nearly due south 70 miles, receiving from the north-west the Chipola, and separating into several channels, opens into St. George's sound at N. lat. 29° 46′, and into the open Gulf of Mexico at N. lat. 29° 38′. The Appalachicola is the only river of the Gulf of Mexico, except the Mississippi, which forms a salient delta at its estuary; and it is, of all the rivers of the United States of equal length, the one which presents the greatest variety of climate.

The lower valley of the Appalachicola is 70 by 30 miles, area 2100 square miles.

Though less in volume, it is a more navigable stream than the Mobile as to distance, though the latter admits the entrance of the largest vessels at its mouth. The ascent of sea vessels is arrested in Tombigbee at or near Fort St. Stephens; in the Alabama at Claiborne, and in the Appalachicola near its head.

The basin of the Appalachicola extends through

upwards of $5\frac{1}{2}$ deg. of lat. and rising on a table land at least 2000 feet above the level of the Atlantic ocean, or an equivalent in height for five degrees of lat., the temperature must have a difference of 10 degrees.

From Cape St. George, the extreme southern point of the delta of the Appalachicola, to the Point of Pines, the western termination of St. David's bay, distant about 90 miles, is the chord of an elliptical sheet of water or bay of Appalache, the curve waving northward, and having at its innermost extension Ocklockonne bay and the mouths of St. Mark's and Auscilla or Ocklockonne rivers. The depth of this bay is the north-east angle of the Gulf of Mexico.

As a navigable basin, that of Appalache is of minor importance, but gains some consequence as being the inlet to Tallahasse, the newly established capital of Florida. Its principal inlet the Ocklockonne rises in Georgia at N. lat. 31° 35′, long. 6° 40′ W. Flowing south 40 miles, thence south-west 60 miles, receives from the north-west the Atapulquas, and turning thence south-east 25 miles into Appalache bay, after an entire course of 125 miles, nearly one-half in Florida.

The St. Marks is a short river or bay of about 20 miles comparative course, rising at N. lat. 30° 20′, 15 miles south-east from Tallahasse. Its source is a large pond or lake, from which it flows a little W. of S. and is navigable for boats of considerable tonnage to its very source.

The Suwanne follows the Appalachicola basin at the source of the former; but in their respective courses towards the Gulf of Mexico enclose between them the more confined basin of the Appalache. The Suwanne rises in Dooley county, in Georgia, between the Flint and Oakmulgee rivers, and heading also with the great St. Illa. It is formed by two branches, the Alapapaha to the east, and Suwanne

proper to the west. The extreme source of the latter is at N. lat. 32°. Pursuing a southern course 70 miles, it thence inflects to S.S.E. 35 miles, enters Florida, and continues the last course 30 miles, receiving the Alapapaha from the N.E.

The Alapapaha rises at N. lat. 31° 35′, between the sources of the Suwanne and St. Illa, and flowing thence 80 miles, receives from the N.E. the drain of the tract absurdly called Okofinoke swamp, turns to S.W. 10 miles, and unites with the Suwanne, at N. lat. 30° 25′, long. 6° 20′ W. The united vallies of the Suwanne and Alapapaha above their junction, form a parallelogram of about 85 by 50 miles, area 4250 square miles.

The Suwanne, now a considerable stream, flows by a rather circuitous channel, but by comparative courses 65 miles, separating the basin of St. John's from that of Appalache, and falls into the gulf of Mexico, between Sta. Fe and Vacasausa bays, at N. lat. 29° 20′, long. 6° 13′ W. In Florida, Suwanne receives few tributaries from the west, and those it does receive from that side are mere creeks; but on the eastern side, about 30 miles above the mouth, a very remarkable stream enters, the Santa Fe. This small river heads with Black creek of St. Johns, and is composed of two branches, both of which have natural bridges; the main or eastern branch flowing 3 miles, and the western half a mile subterraneously, before their junction.

The valley of the Suwanne below the junction of its main constituents, is in length from north to south, 65, with a mean width of 40 miles, area 2600 square miles. Entire area of the basin 7200. Geographically, Suwanne basin extends from N. lat. 29° 24′, to N. lat. 32°, long. W.C. from 5° 24 to 6° 53′ W.

This river closes the list of tributary rivers entering the northern shore of the Gulf of Mexico. As laid down in Tanner's map of Florida, this bay is traversed by long. W. C. 6° W., and towards the

southern extremity by N. lat. 29°. It is therefore directly east from the mouths of the Mississippi, distant 7 degrees of longitude or 432 miles.

With Vacasausa bay, commences on the western side the peninsula of Florida. Nature has, indeed, traced no definite limit to this section of North America; but contrasting its position with the adjacent part of the continent, the mouths of Suwanne and St. Johns seem to present sufficiently accurate points of separation. Assuming, therefore, these boundaries, a line of about 120 miles within a small fraction, will define the north-western extremity of the peninsula. It is, however, little more than 90 miles directly across from the bottom of Vacasausa bay to the harbour of St. Augustine. From the north-east angle of Vacasausa, the shores of the peninsula, on the western side, incline a little W. of S. 60 miles to the mouth of Amasura river. Here the peninsula is upwards of one hundred and twenty miles wide; a width which it maintains with little variation for 250 miles. In this distance, the only large entrances are, Tampa, or as formerly called, St. Espiritu Santo, N. lat. 27° 50′, and Charlotte harbour at 26° 50′. Thus far the western coast inclines slowly eastward, and at Cape Romano, lat. 26°, in nearly 3½° of latitude, has only made 1° of longitude; but, with Cape Romano commences a deep indenting eastward of upwards of 30 miles, forming Gallivan's bay. With N. lat. 26°, both sides of the peninsula rapidly tend to a point, and finally terminate at Cape Sable, N. lat. 25° 04′, long. 4° 14′ W.

Too little is accurately known of the western coast, and of the rivers flowing from Florida into the Gulf of Mexico, to admit any beneficial detail. The interior structure of the earth on this remarkable peninsula, even renders the very sources of the rivers in great part undefined by nature. It seems to be in fact a region recently and partially wrested from the retiring ocean, and presents, in the forma-

tion of its rivers, a similar aspect, which characterised perhaps all rivers at the epoch of their primitive commencement.*

There appears, too, a general and very gradual inclination from north to south. Hills of some elevation, and calcareous components, stretch between the sources of St.Johns and Amasura rivers; but, advancing more southward, the whole surface becomes a dead, and in great part inundated plain. In Chapter II. of this view, the peculiar structure of the peninsula of Florida, was noticed in discussing the phenomena of the gulf stream. It will not be necessary to pursue the subject farther in this place; we shall, therefore, proceed to a summary of the basins of the Gulf of Mexico, the general features of which we have sketched.

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* See Basin or Valley of Ohio.

No. XIX.—*Table of the extent and geographical position of the smaller river basins in the vicinity of the Delta of the Mississippi.*

BASINS.	Length.	Mean width	Area in sq. miles	Between latitude N.	N.	between longitude W.	W.
Sabine, in the U. S.	200	20	4,000	29° 25′	32° 26′	16° 12′	17° 10′
Calcasiu	150	30	4,500	29 32	31 30	15 44	16 48
Mermentau	100	30	3,000	29 32	30 53	15 17	16 02
Vermillion	80	30	2,400	29 35	30 31	14 33	15 40
Atchafalaya, Teche, &c.	160	35	5,600	29 30	31 32	13 50	15 40
Terre Bonne	50	25	1,250	29 00	29 45	13 10	13 50
La Fourche	85	2	170	29 14	30 04	13 00	14 06
Barrataria	60	25	1,500	29 00	30 05	12 30	14 00
Pearl	220	60	13,200	30 00	33 00	12 00	14 17
Pascagoula	165	40	6,600	30 18	32 40	11 22	13 00
Mobile	290	128	37,120	30 14	35 05	7 00	12 30
Pensacola, &c.	160	80	12,800	30 00	32 10	8 20	10 54
Appalachicola	385	53	20,405	29 38	35 10	6 20	9 35
Appalachie	100	45	4,500	30 00	31 35	6 30	7 45
Suwanne	180	40	7,200	29 24	32 00	5 24	6 53
Western slope of the Peninsula of Florida	340	55	18,700	25 00	30 00	3 35	6 13
			144,240	*			

* Of this area, 2420 is W., and 121,820 E. from the Mississippi.

CHAPTER ~~VIII.~~ IX

GEOGRAPHICAL VIEW OF THE GREAT CENTRAL BASIN OF THE MISSISSIPPI.

Before proceeding to a specific description of the natural sections of the Mississippi basin, the following tabular view is given of each valley.

I would have been rejoiced to have had it in my power, to insert as detailed a tabular view of the particular vallies of the Mississippi basin, as has been given on the Atlantic slope; but the existing state of settlement, and geographical science, are neither sufficiently advanced to admit great detail in the former instance. The greater part of the Ohio valley, and east of the Mississippi generally, is fully explored; but to the westward of the latter river, except in Louisiana, eastern Arkansas and Missouri, though the outline is known, the minute features have not been yet examined with accuracy, and delineated on our maps. It has been my endeavour to state known facts; and where discovery had not afforded certain documents, to be silent. In what I have given, my authorities may have deceived me; but I hope such instances are rare and unimportant.

No. XX.—*Table of the extent and geographical position of the respective vallies of the Mississippi basin.*

NATURAL SECTIONS.	Length.	Mean width	Area in sq. miles	Between latitude N.	N.	between longitude W.	W.
Ohio Valley	750	261	196,000	34° 00′	42° 30′	1° 00′	11° 40′
Mississippi Valley, above Ohio, including the minor valley of Illinois, but exclusive of Missouri	650	277	180,000	37 00	48 00	9 00	20 00
Lower Valley of the Mississippi, including White, Arkansas, and Red River valleys	1,000	200	200,000	29 00	42 00	11 00	30 00
Missouri proper, including Osage, Kansas, Platte rivers, &c.	1,200	437	523,000	37 00	50 00	13 00	35 00
Total - - -	-		1,099,000				

From the preceding table we find that the entire surface drained by the Mississippi and confluents, amounts to the great extent of one million and ninety-nine thousand square miles. It may be seen by reference to table 18, page 257, that the aggregate extent of the Atlantic slope including St. Lawrence basin, amounts to 820,530 square miles, or little more than two-thirds of the extent of the immense regions included in the drain of the Mississippi. I shall now proceed to sketch a brief view of each valley of this important basin, and make the survey in the same order as they stand in table 20.

Ohio Valley.—It has been long my opinion that the Ohio Valley once composed an immense inclined plane, into which the beds of the rivers have been formed by abrasion of water. A similar opinion was formed by Mr. A. Bourne, author of a very valuable map of the state of Ohio, and so very well explained by that gentleman in a letter, from which I quote his words:—"The hills are generally found near the rivers or large creeks, and parallel to them on each side, having between them the alluvial valley, through which the stream meanders, usually near the middle, but sometimes washes the foot of either hill alternately. Perhaps the best idea of the topography of this state, (Ohio) may be obtained by conceiving the state to be one vast elevated plain, near the centre of which the streams rise, and in their course wearing down a bed or valley, whose depth is in proportion to their size, or the density (solidity must be meant) of the earth over which they flow. So that our hills, with some few exceptions, are nothing more or less than cliffs or banks, made by the action of the streams: and although these cliffs or banks on the rivers or larger creeks, approach the size of mountains, yet their tops are generally level, being the remains of the ancient plain. In the eastern part of the state, some few hills are found in sharp ridges, similar to those in

the eastern states. The bases of the hills are generally composed of limestone, free or sandstone, slate, and gravel, admixed with mineral coal, ochre, &c."

The entire valley of Ohio, as well as most other parts of the basin of Mississippi, rests on horizontal strata, belonging to that formation called by geologists floetz or secondary. In 1815 I surveyed Pittsburgh and its environs, and found the rocks so nearly parallel to the horizon, as to scarce admit a current from the deep perforations of the coal mines. These mines are opened along the sides of the hills, and extend inwards on a level with the horizon, and about 320 feet above the lower surface of the adjacent rivers. The circumstance most conclusive of the fact, that the hills and vallies of this region were formed by abrasion, is the uniformity of elevation, and similarity of material, of corresponding strata, on the opposing banks of the streams: phenomena, however, every where visible, in Ohio valley, where the nature of the country will admit accurate observation.

The Ohio valley is subdivided by the Ohio river into two unequal sections, leaving on the right or N. W. side 80,000, and on the left or S. E. side 116,000 square miles; the Ohio river flowing in a deep ravine, and forming a common recipient for the water poured down from both slopes. The length of the Ohio ravine in a direct line from the city of Pittsburgh to the Mississippi river, is 548, but by the meanders of the stream 948 miles.

The peculiar features of this river, and its immediate banks, have led to most of the gross misrepresentations respecting the valley in general. The low water surface of the Monongahela at Brownsville, is 850, and at Pittsburgh 830 feet above the tides in Potomac river at Washington city. The apex of the hills around Pittsburg are within a small fraction of 460 feet above low water level in the rivers in the same vicinity. These elements give us 830 to be

added to 460, or 1290 feet, as the extreme elevation of the hills near Pittsburg. The data being in great part drawn from actual admeasurement may be considered as correct, and combining the result with the hypothesis of the whole valley being once an inclined and unbroken plain, we are led to the conclusion that about 1300 feet in round numbers was once the general elevation of that plain, where the Monongahela and Allegany now form the Ohio. The plain must have risen considerably higher towards the Appalachian system, and towards lake Erie, and declined slowly towards the Mississippi and Illinois rivers; and such depression, though more gradual, must have continued until the land sunk under the Gulf of Mexico.

The elevation of surface at the central junction of the Ohio and Mississippi, has not been determined with the same precision as has been done respecting that near Pittsburgh, but may be estimated with considerable accuracy from the length of the Mississippi below the mouth of Ohio, which is very nearly 1100 miles. If we allow $3\frac{1}{2}$ inches fall to each mile, we shall have 3850 inches, equal to 321 feet within a very small fraction, for the height of the country at the junction of Ohio and Mississippi rivers. Deducting 321 from 830, would leave 509, as the fall in the Ohio; but this sum exceeds the real depression of that stream. A very considerably greater fall exists from Pittsburg into Chesapeake bay, than into the Gulf of Mexico, a seeming anomaly explicable from the simplest laws of hydrostatics. When speaking of the Gulf of Mexico, in Chapter III, page 86, it was stated that this sheet of water was a real reservoir, supplied by the Gulf stream, and evidently elevated above any other part of either ocean which laves the coast of America. The gulf stream flows from the Gulf of Mexico into the Atlantic ocean with great velocity, and the current, though continually lessening, is continued from the Bahama chan-

nel to the coasts of Europe and Africa, by a curve of upwards of six thousand miles ; but if we restrict our view to the higher part of the tropic current, or that from Cuba to Chesapeake bay, or about 1000 miles, the velocity of the stream must demand at least an inch fall per mile, or 83 feet. If this hypothesis is correctly formed from existing data, then is the surface of Chesapeake bay 83 feet depressed below that of the Gulf of Mexico, and of course the fall of water from Pittsburg into the latter recipient only 747 feet. The allowance I made in my geographical dictionary on this head, page 476, was 125 feet, and I am now far from being certain, that the diminution to 83 feet is better sanctioned by the real phenomena.

It is a fair induction from what has been stated, that the valley of Ohio is composed of an inclined plain, furrowed by the deep channels of the rivers, and chequered by hills and alluvial flats, the whole resting on a floetz or secondary formation. In some parts of the basin, particularly in the state of Kentucky, the rivers flow in chasms rather than valleys, in the true meaning of the latter term. The two opposing slopes present some curious contrasts. Though most extensive, the south-eastern slope has no considerable remains of the ancient plain ; the north-western slope on the contrary, contains in the central parts of Ohio, Indiana, and Illinois, large tracts marking unequivocally the primitive state of the valley. The confluents of Ohio, which flow from the Appalachian mountains, are precipitous torrents from their sources, and, as has been already noted, pursue their courses in deep channels ; whilst those streams which derive their fountains from the north-western slope, rise on a continuous plain, in some places morass, sluggish towards their sources, but gaining velocity as they approach the Ohio.

The principal confluents of Ohio from the south-eastern slope are, the Monongahela, Little Kenhawa,

Great Guyandot, Sandy, Licking, Kentucky, Greene, Cumberland and Tennessee. Those flowing from the north-west are the Allegany, Beaver, Muskingum, Hockhocking, Sciota, Miami and Wabash. Of these streams, the Allegany and Monongahela are the constituents of Ohio; the former rising in Pennsylvania and New York, and fed by numerous branches, pursues a general course of S. a little W. 200 miles, but with a very circuitous channel, and unites with the Monongahela at Pittsburgh. The latter rises in Virginia at N. lat. 38°, by two branches, the Monongahela and Cheat; draining Pocahontas, Lewis, Randolph, Preston, Harrison, and Monongalia counties, unites immediately within the southern boundary of Pennsylvania, and continuing by a general course nearly north, joins the Allegany, and forms the Ohio, after a comparative course of 150 miles, but perhaps 200 by the windings of the streams.

The sources of the Allegany are the extreme north-eastern tributaries of the Mississippi basin, and flow from the highest part of the Ohio valley. Westward from the valley of the Allegany, that of the Beaver exhibits the commencement of the central plain which divides the basins of Mississippi and St. Lawrence. This plain stretches westward, and widening in extent over the states of Ohio, Indiana, and Illinois, reaches the Mississippi river. In its natural state, the valley of Ohio was generally covered with a very dense forest, but the central plain presented an exception. As far east as the sources of Muskingum, commenced open savannahs, covered with grass, and devoid of timber. Similar to the plain itself, those savannahs or prairies expanded to the westward, and on the waters of Illinois opened into immense natural meadows, generally known under the denomination of prairies, from using the French word for meadow.

It has been shown in this article, that Pittsburg

was elevated 747 feet above the surface of the Gulf of Mexico. Lake Erie has been found 565, and Pittsburg 830 feet above tide water in the Atlantic bays of Chesapeake, Delaware, Hudson, and St. Lawrence; consequently Pittsburg is elevated 265 feet above lake Erie; the intermediate distance in a direct line, 105 miles. Therefore, if a channel could be opened from the level of Ohio at Pittsburg, as deep as the bottom of that river, and carrried into lake Erie, the water of Allegany and Monongahela, in place of flowing toward the Gulf of Mexico, would rush into lake Erie with a velocity of 265 feet in 105 miles, or upwards of 2½ feet per mile.

A due attention to these mathematically established facts, will enable the reader to comprehend the real structure of the higher part of the valley of Ohio. Nothing indeed but real admeasurement could render credible, that the Allegany river should have part of its source within five miles from the margin of lake Erie, and after winding from thence 200 miles, receive a large southern branch, and be still 265 feet above the surface of the lake. In fact, the Ohio does not sink to the level of lake Erie before having flowed as low down as the vicinity of Marietta, and the mouth of Muskingum.

Another feature in the Ohio valley, is in a peculiar manner interesting; that is, the real slope of its surface. At a first glance upon the map, it would be naturally supposed that from the sources of Allegany and Monongahela, the plain would depress towards the final recipient, the Mississippi; but such is, however, not the fact. It is well known that, during the continuance of spring floods, loaded boats of considerable size can be navigated from the rapids of Ohio at Louisville, by the Ohio, Mississippi, and Illinois rivers into lake Michigan, and to the head of Niagara falls, without meeting a single rapid: whilst the direct line between the two extremes passes over an elevated ridge.

We have found the surface of the Mississippi at the mouth of the Ohio, elevated 321 feet above the Gulf of Mexico. Lake Michigan is about 35 feet higher than lake Erie, or 600 feet above the Atlantic tides. In most parts of its course, Illinois river has much more the aspect of a winding canal than that of a river in the true meaning of the latter term, there being only 279 feet fall from the level of lake Michigan to the mouth of the Ohio, in a distance of 520 miles, following the meanders of the rivers; or, a small fraction above six inches per mile. These elements demonstrate that no part of Illinois river is as high as the bottom of Ohio at the mouth of Sciota, and only near the vicinity of Cincinnati do the two rivers come on the same level; that the great original plain sloped from the Appalachian system towards the Illinois river and Michigan lake; and that the Ohio traverses the declination of the intermediate space obliquely.

As a navigable section of the United States, the valley of Ohio has some peculiar features. The Ohio itself, and its principal source, the Allegany, are in a striking manner gentle as respects current, and from Hamilton in Cataraugus county, New York, to the Mississippi, over a distance of 1158 miles following the streams, at a moderately high flood, meets, except the Rapids at Louisville, with not a single serious natural impediment. The Monongahela, more impetuous than the Allegany, is yet navigable, without falls or rapids, by both branches, far into Virginia. Descending the valley, the two largest confluents from the south-east, the great Kenhawa and Tennessee, rise, by interlocking sources, in Ashe county, North Carolina, and flowing in directly opposite courses, each reaches its recipient, the Ohio, by an immense curve, which taken together, sweeps round the rivers of Kentucky, and some of those of Virginia and Tennessee. Rising on the highest Appalachian table land of the United

States, at an elevation of at least 2000 feet, the currents of both Tennessee and Kenhawa are extremely rapid; the latter impeded by falls, and the former by rapids at the Muscle Shoals, but both navigable downwards from near their sources. Though scarcely reaching the spurs of the Appalachian system, the rivers of Kentucky, though generally without falls or rapids, have very strong currents arising from the great descent of their common slope.

On the north-west side of the valley, though from a different structure, the rivers are also extremely rapid. Rising on a table land, from 300 to 1000 feet above their mouths, and in no instance having a direct course of 300 miles, the streams, though falling gradually, are real torrents. The Big Beaver, Muskingum, and Hockhocking, have direct falls; but the Sciota, Miami, and Wabash, though excessively rapid, have neither falls nor cataracts to impede navigation.

Taken under one sphere of vision, the Ohio valley may be regarded as a great plain inclining from the Appalachian system to the N. W., and obliquely and deeply cut by the Ohio and its numerous confluents, into chasms from 460 to nearly the level of the streams. In the higher part of the valley, when on the rivers, the banks, with the exception of comparatively narrow flats, near the margins, rise by bold acclivities into hills which have a mountainous aspect. This boldness of outline imperceptibly softens descending the Ohio, and, approaching the Mississippi, a monotonous ring of level woodland bounds the horizon. Ascending the rivers of the south-east slope, the scenery becomes more and more rugged, until terminating in the ridges of the Appalachian chains: on the contrary, if the rivers of the north-west slope are ascended, we find the landscape broken and varied near the Ohio, but around their sources flat and monotonous.

The soil, climate, and vegetable productions of

Ohio valley are in a remarkable manner diverse. The soil, taken generally, may be considered fertile, but with many places presenting strong exceptions. The level calcareous formation in Kentucky, and the wide spread plains of Ohio, Indiana, and Tennessee, present extensive tracts where spring-water is scarce, and wells of very difficult construction. Wherever the face of the earth in this valley is broken into mountain, hill, or dale, excellent fountain water abounds. The south-eastern part of the valley, bounded north by the sources of the Allegany to those entering Tennessee from Alabama, and from lat. 34° 15′ to 42° 30′, is, following a direct line north-east and south-west, 750 miles. From this region, the rivers flow from mountain or very hilly sources by deep and precipitous channels, and it may be remarked, that from the Monongahela to the Tennessee inclusive, whatever may be their courses near their sources, the rivers enter the Ohio in a direction of a little W. of N. From the head of Allegany to the extreme southern bend of Tennessee, both soil and climate, through eight degrees of latitude, present an aspect extremely varied. Natural and exotic vegetables are also in a very remarkable manner generically and specifically diverse; wheat and cotton mingle in the southern extreme, and scarce a single useful plant known in Europe or America, suitable to the climate, but finds a genial soil on this region. There are few timber trees known on the continent from N. lat. 34° to 43° but what may be found on the streams and hills from Alabama to New York. The most valuable and prominent are ten or twelve species of oak, at least half as many species of pine, and hickory; three or four species of maple, one of which, the sugar maple, is of incalculable value; the liriodendron here rises to its utmost majesty, if not mass, and may be called the pride of the western forest; towards New York the hemlock rivals the liriodendron in height, if not in

elegance. Beside those enumerated, the ash, elm, linden, and an immense number of more humble trees, shrubs, and vines, vegetate luxuriantly.

It is along the western spurs of the Appalachian system, that advancing from the shores of the Atlantic to the west, we first find the earth extensively abounding in water, holding more or less muriate of soda (common salt) in solution. It is a truly remarkable fact, that extending a line from Onondaga in New York, into Louisiana, with a slight elliptical curve towards the Appalachian system, salt water has been found wherever the earth has been penetrated to any considerable depth, and in many places breaks out to the day in natural springs. Works for the extraction of the mineral from the fluid solvent, exist from Onondaga to within 8 miles from Natchitoches. Iron might also be named as the product of the region under review, but that most important of all metallic ores abounds so much in numerous other places, that happily no one large section of the United States, can, in respect to its production, claim precedence.

Next to salt and iron, the south-eastern slope of the Ohio valley, particularly to the north-eastward, exposes to open day immeasurable strata of bituminous coal, thus combining three of the most indispensably useful minerals—salt, iron, and coal—and each in quantities which seem to increase with discovery and defy exhaustion.

Differing in aspect from the range we have been surveying, the south-western slope of Ohio valley is, from the greater monotony of its surface, much less productive of mineral treasures, and much less diversified in its vegetable species. On similar latitudes, but trifling difference of climate is perceptible, height and exposure being nearly alike, North-west from Ohio river iron is found, but not extensively; bituminous coal is plentiful along and near Ohio river; and some slight indications of salt and gypsum

occur; but the interior rising and spreading an immense table land, minerals, if they exist, must lie deep, and consequently elude ordinary means of discovery.

Taken as a whole, though the Ohio valley combines numerous advantages, it has been comparatively too highly coloured. The soil on either side of the Ohio river is very far from uniform. In most essential circumstances, as respects natural phenomena, and human economy, strong analogies exist between the contiguous parts of the two sections of Ohio valley, whilst their extremes present a complete contrast. It has been an error with travellers who merely passed along and near Ohio river, to represent the Ohio valley as a country fertile, pleasing, and inviting, but of uniform physiognomy; but so far, however, from its being so in fact, it would be very difficult to find any other equal extent of the earth, where natural features are more strongly contrasted ; where is every species of surface from the rugged mountain precipice to plains scarce more inclined than the surface of an ocean in a calm; where forests almost impenetrably dense, are followed by naked prairies; and where rivers flow with every degree of rapidity, from perceptible motion to the violence of a cataract; and, in fine, where exists almost every diversity of soil, from the exuberantly fertile alluvion, to the utmost extent of sterility.

By turning to table 20, it will be seen that the valley of Mississippi proper above the Missouri, is not so extensive as that of Ohio. The greatest length of the former is from the sources of the Mississippi river to the junction of that stream with the Missouri, 750 miles, and its greatest breadth, from the sources of Ouisconsin to those of Lemoine river, 350 miles.

In our survey of the Ohio valley, we have reached the verge of those wide spread prairies, savannahs,

or steppes, which more westward dilate until forests dwindle to mere clumps or narrow lines along the streams, and in the intermediate spaces extend grassy wastes, which seem to lengthen as the traveller speeds over their monotonous surface. It has already been noticed in this view, that in its natural state, an almost unbroken forest spread over and around the Appalachian system of mountains, reaching to the Atlantic ocean, Gulf of Mexico, and stretching over St. Lawrence towards Hudson's bay, and westward beyond the Mississippi and Ohio. This is, perhaps, the most extensive continuous forest which exists on earth. The human hand has, indeed, marked its surface by opening a few spots, but the far greater part remains the empire of trees. Beyond this wooded region, to the west, follows another, far more extensive, but of very different character. The second or grassy tract is not separated from the wooded by any definite limit; in passing from one to the other, the features are so blended as to render the transition imperceptible.

In general, the prairie region is less hilly, mountainous, or rocky than that of the forest; but exceptions in both cases are frequent. Plains of great extent do exist in the latter, and mountains of great elevation, mass, and extent, chequer the former section.

From the local features of the country from which its sources are derived, the real extreme head of the Mississippi continues doubtful. According to Tanner's Map of North America, this river rises at N. lat. 48°36′, W. lon. 18°, interlocking sources with Red river branch of Assiniboin and with the western sources of lake Superior, and, pursuing a course of S.S.E. joins the Missouri at N. lat. 38° 56′, having traversed a small fraction above 9½ degrees of latitude. The actual length of the Mississippi is still less accurately known than the position of its source. Like other central rivers

of the United States, the length of the Mississippi has no doubt been overrated. Compared on good maps, no essential difference in length appears between the Ohio and Mississippi, when Allegany is added to the former. In this manner Ohio measures very near 1200 miles, and no serious error will, I am persuaded, arise from assigning a similar length to the Mississippi.

From the right bank the Mississippi receives, advancing from source to mouth, Leech-lake river, Vermillion, Pine, Corbeau (crow river), Elk and Sac, above the Falls of St. Anthony; below the latter point are the confluents, St. Peters, Upper Iowa, Little Maquaquetois, Galena, Great Maquaquetois, Lower Iowa, and Lemoine. From the left in descending, enter Thornberry, Round-lake, Turtle, Portage, Chevreuill, Prairie, Trout, Sandy-lake, St. Francis, and Rum rivers, above St. Anthony's Falls; and below that cataract St. Croix, Chippeway, Black, Prairie, le Crosse, Ouisconsin, Sissinawa, Riviere au Fevre, Rock, Henderson, and Illinois. The confluents of the Mississippi, are given in great part on the respectable authority of Mr. Schoolcraft, who estimates the elevation of the sources of that stream at 1330 feet. From comparative length of course, with the Ohio, and from other data, the statement of Mr. Schoolcraft approaches, it is probable, very near the real elevation of that marshy table land, which gives source to the southern branch of Assiniboin, and to the Mississippi.

The Ohio, in its north-eastern and extreme sources, we have found issuing from an elevated, mountainous, and highly variegated country; those of the Mississippi, on the contrary, ooze from an immense marshy plain, in great part devoid of timber. The intervening space between lake Superior, and the great inflection of Missouri at the Mandan villages, rises by a rapid acclivity to near

700 feet above the lake, and thence spreads towards the Missouri in a level with very little declination from the horizon. From the preceding features, the sources of the Mississippi have great resemblance to those of the Miami, Sciota, and Wabash branches of Ohio. It is indeed a circumstance peculiar to the Mississippi, that the physiognomy of nature around its head and estuary bear so strong resemblance. A difference of 19 degrees of latitude precludes much resemblance in vegetable or stationary animal production; but according to Mr. Schoolcraft, who visited the sources in the month of July, the migratory water fowl found there at that time of the year, are very nearly specifically the same, which flock in countless millions over the Delta, in December, January, February and March. "It is also deserving of remark," says Mr. Schoolcraft, "that its sources lie in a region of almost continual winter, while it enters the ocean under the latitude of perpetual verdure."

On a view of the particular valley of the Mississippi, its general monotony first strikes the eye. No chains or groups of mountains, or elevated ranges of hills, rise to vary the perspective. Over so wide a space as 180,000 square miles, some solitary elevations do exist, which for want of contrast are dignified by the name of mountains; but few continuous tracts of equal extent, afford so little diversity of surface.

The Mississippi itself is traversed by numerous falls of humble perpendicular descent; such is Pegagama, about mid-way between Sandy and Winnepec lakes, at N. lat. 47° 30′; the Little Falls at N. lat. 46°; Big Falls below the mouth of Sac river; and those of St. Anthony at N. lat. 45°, immediately above the mouth of St. Peter's river. Many places along the banks of Mississippi are high, broken, and precipitous; but taken as a whole, there is a sameness which strikingly contrasts with the ever vary-

ing landscapes, along the higher part of the Ohio, and upon the Appalachian streams.

Extending through 9 degrees of latitude, the change of climate in the Mississippi basin is very considerable, and the extremes of temperature are again augmented by a difference of level of upwards of one thousand feet, or an equivalent to at least 2 degrees of latitude. It has been already shewn, that the temperature of similar latitudes and heights, lowers advancing westward on the continent of North America, and this phenomenon is very apparent in passing from the valley of Ohio to that of the Mississippi. In point of climate and soil, and, lead excepted, mineral production, the latter valley is very inferior to the former. Vegetables on similar latitudes, either indigenous or exotic, do not very materially differ specifically on the two valleys. Near the source of the Mississippi, the prevalent timber is composed of pine, spruce, cedar, maple, and white birch. Timber is, however, comparatively scarce on this valley, as so much surface is occupied by prairie, or lakes; extensive lines of alluvial soil of great fertility, border the streams, particularly the Mississippi itself and Illinois, but in no near proportion to the same species of soil in the valley of Ohio.

A species of cerealia, the Zizania aquatica, or as it is usually called, Wild Rice, is found over perhaps 3,000,000 square miles in N. America, but has not yet been cultivated as a domestic grain. This grass abounds around the lakes and higher streams of the Mississippi, and constitutes a considerable part of the food of the native Indians. It would be a service done to the human species, if some person suitably situated would bring the Zizania aquatica, to the test of experiment, and determine whether cultivation would not develope the seed of this vegetable, as it has done with other cerealia, such as wheat, rye, oats, barley, rice, and maize. If

such an experiment would lead to a favourable result, immense regions of interior N. America, would admit dense population, which without such a grain must continue desolate.

Missouri, including Osage, Kansas, and Platte valleys, would follow in natural order of position the vallies of Ohio and Mississippi, but from priority of civilized settlement, and the organization of state and territory, I have concluded to give a preference to the lower valley of Mississippi, with the vallies of Red, Arkansas and White rivers. The greatest length of the lower Mississippi valley extends about 1200 miles in a direction from northwest to southeast, having the source of the Arkansas and the mouth of Red river as extreme points; reaching from N. lat. 29° to 42°, and without estimating mountain ridges or peaks, differing in relative elevation at least 5000 feet. If we add the actual difference of latitude, 13 degrees, to an allowance of 10 degrees for relative elevation, the climate at the northwest extreme must differ from that of the Delta 23 degrees in temperature, and render the seasons at the head of Arkansas, as severe as those in N. lat. 52° on the Atlantic coast of Labrador.

From the influx of Missouri, to that of Ohio, the volume of the Mississippi rolls, by a general S. S. E. course of 140, but by its windings 190 miles; but on receiving the Ohio, the main recipient inflects to a course of S. S. W. which it pursues 250 miles by direct course, but 380 following the bends, to the influx of White and Arkansas rivers. Turning thence to a very little W. of S. crosses three degrees of latitude or 210 miles in a direct line, but with the sinuosities of the river 360 miles, to the influx of Red river, and 1½ miles below the outlet of Atchafalaya. Below the latter point the Mississippi once more inflects its general course, and bends to S. E. in which direction it continues by direct line 220,

but by the windings of the stream 335 miles, to its final discharge into the Gulf of Mexico.

The preceding elements give to the Mississippi below Missouri, a comparative course of 820, and an absolute length following the meanders of 1265 miles.

Into this main volume as a recipient are poured from the north-west, St. Francis, White, Arkansas, and Red rivers; and from the south-east, from the mouth of the Ohio, Obion, Forked Deer, Big Hatche, Loosahatchie, Yazoo, Big Black, and Homochitto, with some other streams of lesser note.

In no other circumstance is the physical geography of any part of the United States more remarkable, than in the prodigious inequality of the two opposing planes, down which are poured the confluents of the Mississippi below the influx of the Ohio. The western inclined plane, falling from the Chippewayan, sweeps over upwards of eight hundred miles, whilst the eastern, sloping from Tennessee and Mississippi, does not average a mean width of one hundred miles. The rivers which drain the two slopes are in respective length of course, proportionate to the extent of their planes of descent; whilst Red river exceeds a comparative course of 800, the Arkansas of 1000, and White river of 400, the longest stream from the opposite slope falls short of 200 miles. The alluvion brought down by such volumes as those of White, Arkansas, and Red rivers, explains satisfactorily, the reason why the Mississippi infringes so often on the eastern, and no where below the Ohio touches the western bluffs.

The lower valley of the Mississippi, is the most variegated section of the United States. Every form of landscape, every trait of natural physiognomy, and an exhaustless quantity, with an illimitable specific diversity of vegetable and metallic production, are found upon this extensive region. Flanked on the east by a dense forest, and on the west by the

naked ridges and spines of the Chippewayan, the deep entangled woods of the Mississippi, are set in relief, against the expansive prairies of Arkansas and Red river. The marshes of the Delta scarcely rising above the Gulf of Mexico, form one extreme, upon which, wherever the soil is arable, rise the orange tree and sugar cane, with many other vegetables, reminding the traveller that he is on the verge of a tropical zone ; on the other hand, the Arkansas is seen to draw its impetuous sources from the cold and sterile plains and vales of the Chippewayan. In the Delta, we behold the fierce but sluggish alligator watching for his prey, whilst on the mountain streams of the north west, we behold the argali, the antelope, wild deer and buffaloe, breathing and bounding in native freedom.

It is here also, that man himself experiences the utmost extremes of health and disease ; it is here in ranging from one limit to the other, he trembles and dreads to encounter sickness and death in the Delta, but feels the utmost pleasure of healthful animation on the wide spread, elevated and dry plains of Arkansas and Texas. It is here, that even now are seen the utmost contrasts that civilized modes of life can assume. In New Orleans and its vicinity, splendor, luxury, and indolence, superinduced by the climate, and fostered by wealth, and I might say by literature, where action is pain unless stimulated by pleasure, are followed in western Louisiana and in Texas, by the infinitely more animated, dare I say infinitely more happy life of the pastoral horseman. Free as the plains over which they roam, and nerved by an air of unequalled purity, these ever active sons of the chase, know no luxury beyond their herds, nor sigh for any distinction but that of mounting and managing their steeds with most adroitness. They are the Tartars of North America. The mind cannot but dwell upon the physical similitude between the desert steppes of central

Asia and these interior prairies, and the still stronger resemblance which does and ever must continue to exist between the inhabitants of those distant regions.

If the minor parts of this great natural section of the Mississippi basin are reviewed in detail, the most prominent object is the Arkansas. If the Missouri is viewed as the first in magnitude amongst the confluents of the Mississippi, the second rank is due to the Arkansas, it being longer, and draining more surface than either the Ohio, Mississippi proper, or Platte. The actual remote sources of the Arkansas remain unknown, but must extend to near N. lat. 42°, and lon. 34° W., and entering the Mississippi at 33° 56′, and lon. 14° 10′ W., passes over 8° of lat. and 20° of lon. with a comparative course of 1400, and following its bends a length of at least 2000 miles. This really great river is navigable about 600 miles, but issuing from an elevated and mountainous region, its main volume and numerous branches are much impeded by shoals and cataracts; but below the mouth of Canadian Fork, though passing through a minor chain of mountains, the Arkansas rolls its stream of about 600 yards wide, with great depth, to the Mississippi.

Next in the volume and length of course to the Arkansas is Red river, which like its rival flows from hidden fountains in the mountains of Santa Fe. If the information given by Major Long be correct, and it is entitled to great credit, Red river rises from N. lat. 32° to 35°, and from 25° to 28° W. By comparative courses this stream flows over about 1000, but by its meanders exceeds in length 1500 miles.

Both Arkansas and Red rivers have their periodical annual swell, and enter their recipient in seasons of flood, with immense volumes, which contribute largely to that enormous mass of water which every spring flows over Louisiana into the


ILLINOIS
AND
MISSOURI
Miles.
10 20 40 60
MISSOURI RIVER
West Part
Longitude West 14 from Washington
ILLINOIS
MISSOURI
LAKE MICHIGAN
MISSISSIPPI RIVER
Illinois River
Missouri R.
Ohio R.
Wabash R.
Osage River
Chicago
Ft. Dearborn
Springfield
VANDALIA
St. Louis
St. Charles
KASKASKIA
JEFFERSON
FRANKLIN
Chariton
Columbia
Louisiana
Peoria
Alton
Potosi
St. Genevieve
New Madrid
Shawnee town
Vincennes
Palestine
Henderson
Evansville
Salem
Cumberland R.
Tennessee R.
J. Knight Sc.

Gulf of Mexico. Impregnated by saline particles, and coloured by ochreous earth, the waters of these two rivers are at once brackish and nauseous to the taste, particularly near their mouths; that of Red river so much so, that at Nachitoches at low water it cannot be used even for culinary purposes.

White river entering from the same side, 20 miles above Arkansas, though humble when compared with Arkansas and Red rivers, is nevertheless a stream of considerable magnitude, draining the space between the Arkansas, Osage, Missouri, Mississippi and St. Francis rivers. With an entire comparative course of 400 miles, White river by its numerous branches, waters a fine tract of country nearly equally divided between the state of Missouri and the territory of Arkansas.

St. Francis and Merrimac, the first entering the Mississippi 36 miles below the mouth of Missouri, and the second 287 miles following the bends below the mouth of Ohio, are both fine streams, though humble when compared with the lengthened Arkansas and Red rivers, or even White river, but gaining consequence as flowing from the lead district of Missouri, and from affording navigable channels from fertile and improving districts of country.

St. Francis rises in Madison, Washington and St. Francis counties, Missouri, by numerous branches which pursue a general course S. E. 60 miles, winds then S. and S. S. W., forms in that direction for about 35 miles part of the boundary between Missouri and Arkansas, enters the latter, and continuing S. S. W., falls into the Mississippi at 34° 33′ N. lat. 287 miles below the mouth of Ohio, after a comparative course of 250 miles.

The Merrimac derives great part of its consequence from rising in the mine district, Washington county, Missouri, between the sources of St. Francis and Gasconade, from which it flows by comparative courses 100 miles, and enters Missouri 18 miles below St. Louis.

The small rivers of the eastern slope, the Obion, Forked Deer, the two Hatches, Wolf, Yazoo, Big Black and Homochitto, have nothing to merit particular notice in so brief a view.

The Mississippi proper, being first discovered, has by prescription, given name to the basin, though the Missouri and its confluents drain nearly one half the entire surface. In our survey of the Ohio, Mississippi proper, and the lower confluents of that stream, we have been slowly emerging from the Appalachian woods, and opening our way to the interminable plains of the Chippewayan. Reaching the thousand streams of the Missouri, wastes of grass and thorny opuntia, mock the eye and defy the toil of the traveller.

Missouri rises, in what is with unparalleled absurdity called Rocky Mountains, a part of the great Chippewayan system. The stream called by preeminence Missouri, is not the main branch, if our maps are even in a tolerable manner correct. The Yellow Stone river is longer than its rival above their junction, and receives also larger and longer confluents. Assuming, however, as the sources of Missouri, Madison's and Jefferson's rivers, that great stream rises at N. lat. 44°, lon. 30° W. The general course for about 120 miles is N. E. receiving in that distance several tributary streams; thence turns N. 120 miles, and about N. lat. 46° 20′ is augmented by Dearborne's river from the N. W. It thence curves N. E. 80 miles, to the influx of Maria's river from the N. W., and turning east 150, and thence north east 150, joins the Yellow Stone river from the south west.

The Yellow Stone river rises in the Chippewayan at N. lat. 42°, lon. 30° W. and flowing thence by comparative courses about 800 miles, unites with the Missouri at N. lat. 48° 10′, lon. 24° 20′ W., and is evidently the main branch. Estimated however, by either branch, and by the windings of the

streams, the Missouri has here flowed above the mouth of Yellow Stone river upwards of 1000 miles, and drained at least 150,000 square miles. Its volume is here perhaps but little, if any, less wide or deep than at the junction with the Mississippi. A few miles below the influx of the Yellow Stone, the Missouri has reached its utmost northern bend 48° 20′; and curves by a regular sweep of 200 miles to the Mandan villages. It is along the intermediate space from the Yellow Stone to the Mandan towns, that on the left side many of the sources of Assiniboin rise, within from 1 to 5 miles from the margin of Missouri. Immediately above the Mandan villages, this now large river, assumes a general southern course over $4\frac{1}{2}$ degrees of lat. or 300 miles, receiving from the left only a few unimportant creeks, but from the right, Cannon Ball, Wetarhoo, Sarwarcarna, Chayenne, Teton and White rivers. Below the influx of White river, the Missouri inflects to a general but very winding course of S. E. 300 miles to its junction with Platte; and thence S. S. E. 200 miles to the influx of Kansas river.

The Platte and Kansas are two great confluents rising in the Chippewayan, and flowing, by comparative courses, generally to the eastward, the former 700, and the latter 600 miles. The Kansas joins its recipient on the western boundary of the state of Missouri, N. lat. 39° 05′, long. 17° 31′ W. Receiving the Kansas, and entering the state of Missouri, the Missouri inflects to a little S. of E. 250 miles to its junction with the Mississippi, after an entire comparative course of 1870, but by the meanders at least 3000 miles.

It may be observed, by reference to a map of that part of the United States, that the confluents of Missouri, of any considerable length, are all from the right; and that those from the left, below Yellow Stone river, with the single exception of Jacques river, have courses comparatively falling short of

250, and very few amounting to 100 miles. Below the Kansas, from the right, the only rivers demanding particular notice are the Osage and Gasconade; the former a stream issuing in the plains between Grand river branch of the Arkansas and the Kansas, and flowing by comparative courses 300 miles, in a direction of N. E. by E., joining the Missouri at very near the centre of the state of the same name, N. lat. 38° 32′, long. 14° 50′ W.

The Gasconade is a small, but from its position an important stream, rising in the southern part of Missouri, between the sources of White and Osage rivers, flowing by comparative courses 120 miles, in a direction a little E. of N., and falling into Missouri river in the county of Gasconade.

The preceding account of the Missouri and its confluents is, from the state of our geographical knowledge, very general. As high as the Mandan villages, Lewis and Clarke, Stoddard, Brackenridge, Bradbury, and others have given tolerable ample notices of the main stream; but with all that has yet been published a feeble and uncertain light has been thrown on these immense regions.

The greatest length of the valley of Missouri extends from the mouth of that stream to the head of Maria's river 1200 miles, its greatest breadth from the sources of the Platte, to a short distance southeast from the Mandan villages, 700 miles, with an area of 523,000 square miles; equal to 334,000,000 of statute acres.

If we imagine this vast space engrasped by one sweep of vision, three remarkable features must command pre-eminence; first, the turbid character of the water; secondly, the very unequal volumes of the right and left confluents; and thirdly, the immensity of the open prairies over the river lines of forest. In the direction of the rivers, the inclined plain of Missouri exceeds 800 miles from the vallies of the Chippewayan, and rather more than that

distance from S. to N. from the southern branches of Kansas to the extreme heads of the northern confluents of the valley. Ascending from the lower verge of this widely extended plain, wood becomes more and more scarce, until one naked surface spreads on all sides. Even the ridges and chains of the Chippewayan partake of these traits of desolation. The traveller, who has read the descriptions of central Asia, by Tooke or Pallas, will feel, on the higher branches of Missouri, a resemblance at once striking and appalling. He will feel and regret how much of the earth's surface is doomed to irremediable silence, and he will acknowledge, if near the Chippewayan in winter, that the utmost intensity of frost over Siberia and Mongolia has its full counterpart in North America, on similar if not on lower latitudes.

If those of the Yellow Stone are included, the sources of Missouri rise along the Chippewayan through eight degrees of latitude, or near 600 miles, and it is very worthy of notice that the far largest tributaries rise in comparatively a southern and flow north-east to a northern latitude, and that the main volume has actually flowed 1300 miles before it regains the latitude of the extreme southern sources of Yellow Stone river.

But of all the characteristics which distinguish the Missouri and its confluents, the few direct falls or even rapids is certainly the most remarkable. Between Dearborne's and Maria's rivers the Missouri leaves the Chippewayan, by rolling over ledges of rock for a distance of 18 miles; after which this overwhelming mass of water, though every where flowing with great rapidity, nowhere swells into a lake, or rolls over a single cataract in a distance of at least 3500 miles to the Gulf of Mexico. If, therefore, the Amazon is excepted, the Missouri and its continuation the Mississippi afford the most extended uninterrupted line of river navigation which has ever been discovered.

Embracing a considerable fraction above the one-eightieth part of the land area of the earth, and differing in level from about 400 to perhaps 10,000 feet above the oceanic level. Rejecting, however, the mountain peaks and ridges, and allowing an elevation of 5000 feet to the table land of Chippewayan at N. lat. 47°, we have a difference in height equal to 10 degrees of latitude, which added to 8 degrees the actual extremes, will yield 18 degrees as the change of temperature from the junction of the Missouri with the Mississippi to the mountain vales from which the sources of the former are derived.

The arable surface of the Missouri valley bears, it must be acknowledged, a very diminished rank when compared with its great extent. The state of Missouri extending over 63,000 square miles, with about one half, or 31,500 square miles, in the Missouri valley, if the advantage of climate is added to that of soil, has, it is probable, one-fourth part of the productive arable surface of the whole valley.

With the exception of the alluvial banks of the streams, the soil is, as far as correct information has been given, dry and sterile, which superadded to the want of timber, and in many places to great extent the want of fresh water, any considerable density of population over the whole valley is impossible.

The mineral treasures may, in some respects, compensate for asperity of soil and scarcity of wood. On viewing the very extensive masses of iron ore and mineral coal, laid open to the day along the Missouri, Mr. Bradbury expressed himself in raptures. So small a part, it is true, however, has been examined with any care, by even Mr. Bradbury himself, that no conclusive deductions can be drawn of the natural history of the Missouri valley until scientific research has been more extensively employed to explore its vegetable and mineral resources.

To close the survey of the Mississippi basin it remains to explain briefly the general laws by which the great annual flood of that basin is regulated. Without a previous knowledge of the relative height of the extremes, and the relative extent and geographic position of the component vallies, no correct knowledge of the Mississippi floods can be obtained. Comparing the great extent of the entire basin, and the incalculable number of its rivers, with the moderate elevation and long continuance of spring floods, the mind is naturally led to inquire into the causes of effects at once salutary to man and appa rently anomalous. But when we recur to a good map of the basin, we perceive it subdivided into the four vallies which we have surveyed; Ohio, Mississippi proper, lower Mississippi, and Missouri.

If we were to regard the geographic position of the vallies relatively, and were unaided by a single fact drawn from an experience of their annual rise, it would follow from theory, that no simultaneous spring flood is possible, but that the water of each valley must drain out separately. It would again appear, that in the breaking up of winter, the water of the same valley is drawn from its recesses gradually. It has been observed in this view that rivers flowing from the poles towards the equator, can never be as destructive in their inundations as those whose courses are in the opposite direction; the reasons of which phenomenon are evident, and peculiarly so in the case of the Mississippi basin. Red river, the most southern, is also the first of the great branches of the Mississippi which discharges its waters on the Delta, and is followed by the Arkansas. It is remarkable that the Ohio and Arkansas, remote as they are from each other, are the two streams of the whole basin which most uniformly emit their flood at the same time, and are the streams, with some addition from Mississippi proper, which give the highest and most durable flood to the Delta.

The Mississippi proper flowing so nearly north and south, spring thaws commence near the mouth and retrograde slowly towards the source, and consequently the discharge is gradual. Similar remarks apply also to the Ohio and Arkansas, and thus lengthen the duration and moderate the quantity in a given time of water on the Delta.

In common years, Red river flows out in February or early in March, but occasionally continues high from December until late in the ensuing spring. The great flood from Arkansas, Ohio, and Mississippi proper commences generally early in March, and attains it full height on the Delta about the middle of June; abating from the latter period, has greatly subsided by the end of July or beginning of August, when the retarded overflow of Missouri completes by its arrival the annual inundation.

Though the period of flood is well known to the inhabitants of the Delta, and in common years can be calculated within a few days, such is, however, the inequality of the seasons over the whole basin, that no length of experience gives any probable intimation of the quantity or elevation. In 1800, and in 1801, the waters of the Mississippi did not attain the height of the banks.

From the geographical sketch which immediately precedes this chapter, at page 296, it may be seen that the Delta commences with the efflux of Atchafalaya on the right, but on the left with the outlet of the Iberville. In both cases the surplus water discharged from the main stream never returns, but is conveyed on one side into the Atchafalaya and other recipients, and on the other into lakes Pontchartrain, Borgne, and Chandeleur bay.

Connected with the general inundation is the very unfounded but general opinion that the Mississippi river can and does occasionally change its bed, and that it flows on a comparative ridge. The bed of the Mississippi, like that of all other rivers, is the

lowest depression of the country through which it flows. As high as the efflux of La Fourche the stream is 130 feet deep at low water, and at a similar state 75 or 80 at Natchez. At New Orleans the depth exceeds 100 feet. From the immediate margin of this great mass of water the country falls by a very slow depression, and the bottom of the deepest lakes, Pontchartrain, Maurepas, Quacha, Chetimaches, and others, vary from 4 or 5 to 18 or 20 feet below the general level of the Delta, leaving the bottom of the Mississippi upwards of 100 feet below that of Pontchartrain, or any other lake of Louisiana, except those formed in the following manner.

The sweeping bends of the Mississippi cause the volume of its water to recurve upon itself, and by the double abrasion on its opposite side a neck or isthmus is cut through, and thus far a new channel formed, and the ancient bend, though assuming the aspect of a lake, still attests its origin by its proximity, great depth, and perfect resemblance to the bends of the parent stream. Of the latter species of lakes, Fausse Riviere, Homochitta, and Yazoo, were produced within the range of history; those of Concordia, St. John's, St. Joseph's, Providence, and Grand lakes, were found in their existing state when Louisiana was colonized by the French. With the exceptions I have stated, the Mississippi can no more recede from its channel than could the Hudson, Delaware, or Susquehannah; the barriers which confine the latter to their channels are more prominent, but not less irremoveable or impenetrable, than is the extended alluvion which spreads from the former river.

CHAPTER XI.

BASIN OF COLUMBIA, OR TERRITORY OF OREGON.

That imperfectly explored territory of the United States, admits of but bald description, though in itself, in point of extent, an empire. By the treaty of 1821, between the United States and Spain, Oregon is bounded south by N. lat. 42°; on the north the limit was fixed by convention with Russia, at N. lat. 54° 40′, stretching along the Pacific 880, and inland at a mean of about 500 miles, comprising 440,000 square miles, lying between 30° and 54° 40′, W. long.

The explored parts of Oregon are drained by the numerous confluents of one great river, the Columbia. From the little that is distinctly known, the basin of Columbia is limited on the east by the Chippewayan system of mountains, and traversed near the shores of the Pacific, by another system yet nameless. From analogy, are we not warranted in considering the western Columbian mountain system as the extension of that which forms the peninsula of California, and which, extending in a N. N. W. direction, skirts the Pacific, occasionally broken by the river vallies of which the Columbia is the principal?

Between the two systems, at about N. lat. 54°, and 40° W., rises the extreme northern source of Columbia, which flowing S. upwards of 400 miles, unites with Clark's river from the N. E. Below the junction of its two great branches, Columbia

assumes a S. W. course 200 miles; receives at N. lat. 46° 10′, Lewis' river from the N. E., and at about N. lat. 46° turns to the W., which course it maintains 300 miles to its egress into the Pacific ocean at N. lat. 46° 15′, long. 47° 53′ W.

On the eastern side of the western system of mountains, the Columbia receives the Multnomah, a large branch from the S. or S. E. The latter, except for perhaps 100 miles above its mouth, remains unexplored, but from its breadth and volume evinces a remote source, which remains yet to trace.

The extreme northern sources of Columbia interlock with those of Saskashawan, perhaps with those of Unjiga, or Peace river. Clark's river rises by numerous branches in the Chippewayan mountains, interlocking sources with those of Missouri, and Saskashawin; the extreme southern sources rise at N. lat. 45°, and long. 34° 36′ W.; flowing thence first nearly due north, but gradually curving to S. W. joins the Columbia after a comparative course of upwards of five hundred miles.

Lewis' river rises at N. lat. 40°, lon. 30° W. interlocking sources with those of Arkansaw, Platte and Yellow Stone rivers; pursues thence a general N. W. course of 650 miles, receives a large tributary, the Kooskooskee river, from the east, turns to the W. and unites with the Columbia after a comparative course of 800 miles. If not superceded by the Multnomah from future discovery, Lewis' river is the main constituent branch of Columbia.

The Multnomah, as already observed, draws its waters from a *terra incognita*. Spanish travellers have discovered north from the Colorado of California, two rivers, the Rio de Buenaventura, and Rio San Clementina, flowing from the Chippewayan, but final discharge unknown. The most northerly, the San Clementina, the Timpanogos, or the Mongos of Tanner's North America, is by many supposed the extreme south-east source of Multnomah,

and if so, that branch of Columbia rises at N. lat. 41°, lon. 34° W. and must have a comparative course of upwards of seven hundred miles, and will, thus extended, compete for precedence with Lewis' river.

Those four great confluents, Columbia proper, Clark's river, Lewis' river and Multnomah form the very peculiar river of Oregon, which in length, if estimated by Columbia proper, exceeds 1000, by Clark's river 1000, by Lewis' river perhaps 1100, and by the Multnomah at least 900 miles. In relative height the surface of the Oregon basin falls from the plateau of the Chippewayan, at least 3370 feet, to the level of the Pacific ocean. Down this rapid descent the rivers are precipitated over numerous falls and cataracts. The tide penetrates inland through the western system of mountains, and following the windings of the stream upwards of 100 miles. The bay at the mouth opening between capes Adams on the S. E. and Disappointment on the N. W. The entrance with about 26 feet water, is easterly about 20, and thence south-easterly to the mouth of Multnomah, sustaining thus far a depth of at least 20 feet.

The face of the Oregon basin as far as explored is far from promising. Much of the country is broken by mountains or stretches in naked plains. Some fine vallies though of confined extent spread between the chains, and in respect to climate the Oregon territory possesses a decided advantage over that of similar latitudes on the Atlantic coast, to the amount of perhaps 5 or 6 degrees of latitude. *See Chapter X. on Climate.* An isothermal line drawn from the mouth of Columbia would incline rapidly to the south-east, in rising to the plateau of Chippewayan, and allowing that plateau 3870 feet elevation, the line of equal heat would reach N. lat. 37° 50′, supposing 400 feet elevation equal to a degree of latitude; and waving from the summits of Chippewayan towards the Atlantic, would in no

place again inflect as high as its point of outset from the Pacific coast.

From this melioration of temperature, the territory of Oregon, every thing else being equal, will be more habitable than similar latitudes on the Atlantic coast of the United States; and the Columbia much more accessible in winter, than the rivers and havens of Canada, New Brunswick, Nova Scotia and Maine, or in fact even those of the Atlantic coast generally, as low as the Delaware. By reference to the comparative tables of mean heat on the opposing sides of the Atlantic Ocean, it will be seen that advancing from N. lat. 30° towards the northern pole, the line of equal temperature inclines to N. E. and S. W. from a small fraction above 0 to 14½ degrees, giving to the coast of Maine a climate not materially different from that of Norway, in N. lat. 60° But mere mean temperature gives a very inadequate idea of the respective climates on the eastern and western sides of the two continents. The moisture of winter on western coasts, leaves rivers open much higher, than could be expected from any data afforded by the thermometer.

The remote region of Oregon, appears at present as if on another planet. From the elements in table 10, page 76, it appears that a line drawn from Cape Hatteras to the mouth of Columbia river, would measure 2702 statute miles, and that the middle point on such a line, would be found in the valley of Missouri, 200 miles N. 73° 34′ W. from the Council Bluffs. The immensity of the territory of the United States may be faintly conceived by the fact, that St. Louis on the Mississippi, is not one third of the distance from Cape Hatteras to the mouth of Columbia, and that if the whole surface was inhabited and subdivided into organised states, the capital, if central, would stand upwards of 600 miles in a direct line N. W. from St. Louis. By any practica-

ble route, it would be upwards of 3000 miles from Washington City to the mouth of Columbia, and when in the progress of improvement such a route is opened, it will in its interminable range and ramifications, realize in America a picture similar to the vast inland commercial roads and channels of Asia.

If due attention is given to the inevitable advance of settlement and population, the mouth of Columbia presents an opening from the Pacific, on which an American emporium must rise. It is only necessary to combine the philosophy of American history to the relative physical position of Western North America, Polynesia, and south-eastern Asia, to have some foresight of the destiny of Oregon.

We have now completed a rapid survey of that wide portion of the habitable earth, comprising the domain of the United States. As far as the limits of "*The View*," and the existing geographical data would admit, we have sketched the great features of central North America; the mountains, rivers and interior plains have passed in review, and we proceed to an examination of the Meteorological phenomena, or a View of the Climate of the United States. Before, however, quitting the subject of our physical geography, I cannot but notice the immense tract of unexplored territory which exists in the northern regions of Mexico, the western part of the United States, and still more extensive regions claimed by Russia. If we commence with N. lat. 30°, and stretch to Bhering's strait, we have a band of 3000 miles in length, with a mean width of at least 600 miles, or an area of 1,800,000 square miles, of which the civilized world knows with precision, the Pacific coast, and perhaps not the one hundredth part of the interior. Except a single expedition performed under the auspices of Mr. Jefferson, what has the government of the United States done to give to science a knowledge of, if climate is considered, the one twentieth part of the habitable earth?

CHAPTER X.

CLIMATE OF THE UNITED STATES.

The meteorological phenomena of the United States, comprising so large a section of the earth, can not be comprehended, except when taken in connexion with the atmospheric changes of not alone the continent of America, but with those of the whole planet.

The extent of the United States' territory, as a physical portion of the earth, has been given in Chap. II. page 57. In relative position it extends from N. lat. 24° 47′ to N. lat. 51°, and from 10° E. to 51° W. long. Having a long, and, as respects the meridians, an oblique front on the Atlantic ocean, and occupying a nearly central position in the northern temperate zone, the climate of the United States must present some peculiarities, but leaving its general phenomena subject to those universal laws which regulate atmospheric revolution. Before entering on the subject of this chapter, some preparatory remarks may not be, however, irrelevant on the sources from which the data have been derived, and on the particular confidence due to the thermometer as a philosophical instrument. "Thermometrical observations depend so much on the place where the instruments are fixed; from their relative situation in respect to the most prevalent winds; and on the hours of observation, that their results can be admitted as comparative estimates only when the philosopher who undertakes to reconcile them is certain that they have been made nearly in a uniform manner."*

* Jules de Wallenstein, Trans. Am. Phil. Soc. New Series, vol. ii. page 433.

It is with regret that I am compelled to admit a very great discrepancy in thermometrical observations in the United States, and that besides other defects in the mode of conducting them, they are made too exclusively whilst the sun is above the horizon; but with the necessary allowance for unconnected and untimely observation, the thermometer affords an excellent means of comparing the general temperature of different and distant places, and is, when even used rather unskilfully, an infinitely superior dependance to mere hypothesis. Thermometrical observations in any case, however, to have full efficacy in the formation of a theory of climate, must be taken in connexion with prevalent winds. It was the utter neglect of these criteria, and of relative height, which rendered Volney's View so obnoxious to criticism. "The observations which I have made until the present time, accord so little with the conclusions of M. de Volney on the climate of Washington, and I am so little disposed to hazard assertions against so renowned an author, though he has himself given me the example, that I prefer employing myself rather to a redoubled attention to my own researches, than to risk imitating him if he has been too rash in his conjectures, or not to resemble him if he has carefully observed what he has stated to have examined."*

The playful but just censure of M. de Wallenstein I am bold enough to adopt, and extend to the United States, and rest my sustaining the charge on the enclosed document.

From causes, in the detail of which the reader cannot be interested, I have been with not many intervals of rest, upwards of thirty years engaged in pursuits, which led to an attention to the changes

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* Jules de Wallenstein, Trans. A. P. S. New Series, vol. ii. page 426.

of the seasons, and my comparisons have extended over the United States from the 29th to the 45th of N. lat.

Volney's treatise on the Climate of the United States, fell into my hands early in life, and then excited strong doubts of the philosophical accuracy of many conclusions drawn by that author, and in particular, of a mysterious mildness of climate in the Mississippi basin. In opposition to the theory of Volney, I witnessed the annual freezing of rivers west of the mountains, to an extent greatly in excess over similar operations of nature on like latitudes on the Atlantic coast. The destructive influence of frost on vegetation was also brought before my eyes annually, which, with long tedious winters and deep and durable snows, all united to excite more than doubts, respecting a pretended high temperature. On the first reading of Volney's View, I could not avoid observing, that his stay in the country was utterly too short to admit the collection of facts from others, much less to make observations of his own; but of all objections to this author, the most conclusive is, his entire disregard of the influence of relative height on aerial temperature. This omission must at once decide his unfitness for the investigation of the subject of climate, either general or special. The following pages and tables taken from actual observation, will determine how far the winters of central North America deserve a character of superior mildness.

There are four means of determining relative temperature: first, the occurrence and duration of snow; second, freezing of water; third, effect of frost on vegetation; and fourthly, thermometers of various construction.

Of the three first, it will be needless to descant in this place, their effects will be adduced in the course of the chapter; but the thermometer having come into such very general use, demands some inquiry how

far its results are entitled to confidence in settling questions of comparative climate. The validity of results drawn from this instrument as the observations are usually conducted, has been called in question by high authority. In the Quarterly Journal of Science, London, October 1821, page 97, Mr. J. F. Daniel observes, that "Mr. Howard in his late laborious work on the climate of London, has shewn the proper use to be made of such accumulations of facts. It is only by collecting the means of different seasons, thereby neutralizing errors of observation and accidental irregularities; by arranging them in periods chosen according to the influence of particular circumstances; and by carefully collecting and comparing them, however tedious the operation, that we can hope to arrive at certain consequences, and useful results from the preliminary labour. Many, indeed, appear at present to be observers of meteorological phenomena to judge by the registers, which regularly contribute their expletive powers, to every magazine and journal which issues from the press; but for want of proper direction and concert, their perseverance, it is to be feared, is wholly fruitless. The observers themselves, rarely attempt to reason upon their observations, and no one will ever be found willing to sacrifice his time in arranging volumes of materials, when the very accuracy of the instruments, with which they have been collected, may be doubted.

"But who can wonder at this want of co-operation, or to whom shall we look to turn this labour into a useful channel, when even the correctness of the tables, published in the transactions of the Royal Society, has been publicly called in question by Mr. Howard, Mr. Dalton, and Dr. Thomson? The parade of such observations, when confidence in their care (the observers') has once been suspended, is worse than useless;—it is injurious to science."

This, though severe, is a solid criticism on the common thermometrical tables, and supported by a very competent observer in the United States.

"Thermometrical observations, by different persons, vary so much, that many treat them with very little respect. In fact, an approximation to correctness can only result from the use of good instruments, and carefulness about their exposure. This, and the other reports I have published, are founded on a careful comparison of different instruments. I have *two* placed in a northern aspect, at an elevation of near 20 feet from the ground, where they are not exposed to the direct rays of the sun, nor can be much acted upon by reflection, or radiation, of heat, from the neighbouring buildings or paving; though I am well aware, that it is difficult, if not impossible, altogether to prevent this source of exaggeration in a city or considerable town. This is one of the great causes why in country places the heat is less oppressive than in towns built of brick, and with paved streets. On the other hand, a situation permanently defended from the sun's rays, and in a damp yard surrounded with high walls, will never exhibit the true temperature of the atmosphere, but like the descent into a well, will always be colder in summer than other places. Our object has been to get the true temperature of the open air, only removing the direct glare of the sun's rays. Our fellow-citizens in distant places will perceive, I believe, by this month's report, that the city of Washington has really been one of the coolest, as well as the healthiest, residences in the Atlantic States.

"ROBERT LITTLE."

Washington City, August 1, 1825.

Communication to the Columbian Institute, on June 4th, 1827.

Having, in compliance with the request of the Columbian Institute, taken a regular series of Thermometrical Observations for the last four years, and published a monthly report of the same in the papers of this city, my attention has been much engaged to discover the simplest and most certain method of ascertaining the mean heat of the atmosphere, with the least trouble to the observer. Every one must be aware, that, to take three observations each day, for a series of years, at given hours, requires a punctuality, that few persons (however much at leisure) will perseveringly bestow on the subject. I have done this hitherto, but I have ascertained, by a very accurate and unintermitted course of four observations each day, for the last twelve months, that this is no longer necessary.

In a subsequent paper Mr. Little observes:

"The object sought for is the true mean heat of every twenty-four hours. The usual mode is to take three observations, one at 7 A. M., the second at 2 P. M., and the third at 9 P. M., and the sum of these is divided by three. The quotient, however, is not the true mean. Other modes have, therefore, been proposed, but they are attended with still more trouble, and, therefore, more objectionable. The Institute having procured an excellent day and night self-registering Thermometer, I tried with it the experiment of combining the absolute minimums and maximums of every twenty-four hours, with a third observation, taken at 9 in the evening, every day for a complete year; as well as the other observations at the usual hours. The result is, a conviction that every mode of combining three or more observations in each day, will give an average usually higher than the true mean

heat, but frequently also below it. I found that the minimum and maximum of every day, (which, with a proper thermometer, may be taken at one observation,) if added together and divided by two, will give the nearest approximation to the mean heat, that, probably, can be attained. It is of no consequence whether the time of observation, by a self-registering thermometer, be morning or evening. The observer has only to put down the minimum and maximum as the gauges indicate, and then adjust the thermometer by bringing the gauges to the extremity of the fluids in each tube, and then leave them for the next twenty-four hours. The sums of each of the two columns of figures for a whole month, divided by the number of days, and again by two, will give the mean heat of the whole month, with the trouble of only taking one observation a day. To verify these remarks, and to show how small the difference is between this easy, and the other more troublesome way of taking the observations, I have subjoined a table of the results of the two modes just described, accurately taken in the twelve months preceding the 1st of May last.

MEAN HEAT,

As taken from the average of the Maximum and Minimum of each day.			*As taken by three observations each day, at 7 A. M., 2 P. M., 9 P.M.*		
1826,	May,	73.66	1826,	May,	74.22
	June,	77.33		June,	77.38
	July,	78.50		July,	78.33
	August,	77.25		August,	77.33
	September,	72.50		September,	72.81
	October,	59.12		October,	59.33
	November,	48.75		November,	47.70
	December,	37.50		December,	36.75
1827,	January,	30.41	1827,	January,	30.50
	February,	42.50		February,	42.47
	March,	48.00		March,	47.76
	April,	60.99		April,	60.87

	Total		Total
Divide by 12)	706.51	Divide by 12)	705.45
Mean for the year,	58.87	Mean for the year,	58.78

As I am satisfied of the accuracy of these observations, and in the result it appears that in a whole year there is only 9-100ths parts of a degree difference between the modes of ascertaining the mean by the daily maximum and minimum, which requires only one observation, and that of taking three observations at specific hours, I shall, of course, in future, take the shortest and easiest course, and recommend to other reporters of similar tables to adopt the same plan.

ROBERT LITTLE.

"P.S. For those who wish to know the mean temperature at 7 A. M., by some deduction from my tables, I suggest the following rule, which will generally be found very near the truth:—The temperature at 7 A. M, is about 3.50 degrees higher in the whole month than the mean of the minimum. The temperature at 9 P. M. I have found too variable and uncertain to be reduced to any fixed rule."

I have inserted the preceding observations of Mr. Little, as they contain much of the true philosophy of the thermometer, and very good rules for conducting experiments with that instrument, but it will be shown in the sequel of this chapter, that the mean temperature of Washington city, deduced with all the precautions pointed out and taken by Mr. Little, is too high. In recommending a method more easy in practice than those in common use, Mr. Little has been successful. A self-registering thermometer will no doubt answer as well, as will observations made at 7 A. M. and 2 and 9 P. M.; but both modes produce results above or below, in most cases the

former, from the real mean temperature. In fact, a great majority of thermometrical tables give the mean of the day, from 7 in the morning to 9 in the evening, or 14 hours, leaving the other 9 hours unaccounted for, and consequently the mean of the year, deduced from such data, must be evidently far above the true medium temperature.

Mr. Reuben Haines, of Germantown, near Philadelphia, has, with the true liberality of a philosopher, confided to my care and use his manuscript thermometrical notes, which were made from observations early in the morning, at noon, and late in the evening. Mr. Lewis Brantz, of Baltimore, recorded the state of his thermometer at sun-rise, and 2 and 10 P.M. In the tables of this chapter, compiled from the notes of these two latter observers, it will be seen that the respective mean temperatures are comparatively far below the other tables taken from the common methods of observation. With these precautionary remarks, I proceed to the subject matter of our inquiry, prefacing the more particular view of the United States by a general geographical sketch of the earth.

The surface of the earth is very unequally divided into land protuberances and oceanic basins. A cursory glance on a map of the world presents the land rising in two very irregular masses; but a more careful investigation leads to a discovery of a regularity of arrangement which is at once pleasing and unexpected.

The earth, moving in its orbit, with its axis inclined 23½ degrees to the plane of its motion; and that axis carried round the sun nearly parallel to itself, causes the sun's rays to fall perpendicular to the earth's surface on each side of the equator over a space equal to the deflection of its axis. This band or zone of 47 degrees in breadth, having the equator as its middle line, is called the *torrid zone*. The same cause which carries the sun's rays direct

over 23½ degrees on each side of the equator, plunges the two polar extremities into light and darkness six months alternately, and to a distance of 23½ degrees from each pole. These circles round the poles have received the erroneous appellation of Frigid *Zones;* they are real polar circles.

Between the torrid zone, on each of its sides, and the respective polar circles, spread real *zones* of 43° in breadth, which are called the temperate zones.

The land and water are distributed in the respective zones, as exhibited in the following tables. It may be, however, noticed before examining the tables, that the two polar extremities, as far as known, present a remarkable contrast; the northern is enveloped by land, the southern, with little exception, by water.

No. XXI.—*Table of the Area of the Southern, Indian, and Pacific Oceans, taken together.*

				Sq. Miles.
Southern and Pacific oceans included				100,000,000
Indian ocean between 40° and 60° S. lat.				7,880,000
Do.	from	30°	to 40°	4,300,000
Do.	do.	20°	30°	3,200,000
Do.	do.	10°	20°	3,700,000
Do.	do.	10° S. lat to	10° N. lat.	5,200,000
Northern extension of the Indian Ocean with the Red Sea, and Persian gulf,				1,152,000
Bay of Bengal,				613,000
				126,045,000

No. XXII.—*Table of the Atlantic Ocean and connected Seas.*

Atlantic ocean from S. lat. 55° to 40°				1,604,000
Do.	do.	40°	30°	2,700,000
Do.	do.	30°	20°	2,600,000
				6,904,000

Brought forward,	6,904,000
Atlantic ocean from S. lat. 20° to 10°	2,304,000
Atlantic ocean between Cape Palmas in Africa and Cape St. Roque in South America, S. lat. 10° - - -	2,500,000
Atlantic ocean from a line drawn from Cape Palmas to Cape St. Roque, and N. lat. 10°	2,500,000
Atlantic ocean between N. lat. 10° and 20°	3,225,000
Do. do. 20° and 30°	3,441,000
Do. do. 30° and 40°	2,735,000
Do. do. 40° and 50°	2,030,000
Do. do. 50° and 60°	1,505,000
Do. do. N. lat. 60°	1,616,000
Mediterranean and Black Seas, -	735,000
Baltic and its gulfs, - - -	92,000
Hudson's Bay, - - -	250,000
Arctic Ocean, - - - -	4,000,000
	33,837,000

No. XXIII.—*Summary of Oceanic Area.*

Contained in No. 21, - -	126,045,000
Contained in No. 22, - - -	33,857,000
To these aggregates, add for the Caspian, great lakes of America, and other smaller collections of water, - -	250,000
Amount of water surface, - -	160,152,000

No. XXIV.—*Land Area.*

Polynesia, or Oceanica, - -	100,000
Austral Asia, - - - -	3,000,000
Asia, - - - - -	11,500,000
Europe, - - - -	3,020,000
Africa, - - - -	8,000,000
America, Greenland, &c. - -	13,220,000
Amount of land area, - - -	38,840,000

No. XXV.—*Summary of Land and Water.*

Water contained in No. 23. - -	160,152,000
Land contained in No. 24. - - -	38,840,000
Amount of the area of the earth -	198,992,000

From the preceding elements it is seen that the land surface does not amount to the one-fourth part of the entire superficies of the earth. The subjoined tables exhibit the relative distribution of the land and water, as respects the astronomical subdivision of the earth into zones.

No. XXVI.—*Torrid Zone, contains land in*

Asia - - - - - - - -	3,000,000
Austral Asia - - - - - -	1,000,000
Polynesia, or Oceanica - - - -	100,000
Africa - - - - - - - -	5,000,000
South and North America - - -	4,500,000
Amount of land within the Torrid Zone	13,600,000

No. XXVII.—*The Land area of the Southern Temperate Zone.*

Austral Asia - - - - - -	1,400,000
Africa - - - - - - - -	640,000
South America - - - - -	1,520,000
Amount in the Southern Temperate Zone	3,560,000

No. XXVIII.—*Land area in the Northern Temperate Zone.*

In Asia - - - - - - - -	7,600,000
Europe - - - - - - - -	3,020,000
North America, Greenland, &c. - -	5,000,000
Africa - - - - - - - -	2,360,000
	17,960,000

No. XXIX.—*Land area in the Northern Polar Circle.*

Asia	900,000
Europe	20,000
North America, Greenland, &c.	2,600,000
Amount of land in the Northern Polar Circle	3,520,000

No. XXX.—*Land area in the Southern Polar Circle.*
200,000.

The tables 29 and 30 show, in a striking manner, the very unequal distribution of land at the two polar extremities of the earth. It is even doubtful, from the present condition of geographical science, whether there is, in reality, as great an extent as 200,000 square miles of land within the Antartic circle.

The different portions of the land area of the earth, though deeply indented in their outlines, and broken into continents and islands of very unequal relative superficies, and also apparently irregular in their general arrangement, nevertheless rise from the adjacent oceans in two groups, which relatively with the Atlantic ocean may be correctly called eastern and western continents. The Atlantic deserves the distinction here given from another most important circumstance; it is the only large mass of water which reaches from one to the other polar circle, and, as will be clearly shewn, exerts an influence upon the habitable earth to an extent which has, and, as long as the present order of things continue, must control the course of human history.

The superficial area of each great land section is shewn in table 24. If we regard these sections on a map we see the largest group composed of Asia, Austral Asia, Polynesia, Africa, and Europe, spreading eastward from the Atlantic ocean, and comprising an area of 25,620,000 square miles: the lesser group composed of South America, North

America, and Greenland, extending westward from the Atlantic ocean over an area of 13,220,000 square miles.

The relative position and distribution of these two groups and their minor parts, offer to a philosophical view of the earth the most interesting phenomena in physical geography. More than half of the land surface lies north from the tropic of Cancer; and including the land surface in the torrid zone, more than nine-tenths north from the tropic of Capricorn. I have already observed that the northern polar circle is chiefly land, whilst that of the south is still more exclusively an expanse of water.

Indented as the general outline may appear, the great continents preserve a regularity of structure seldom found to prevail in nature, except in the case of planetary revolution. The following calculations will serve to demonstrate the actual prevalence of this admirable geographical system.

The Cape of Good Hope is at S. lat. 33° 56′ and long. 18° 23′ E. from London. Bhering's Strait is at N. lat. 66° 30′ long. 19° 1′ E. of London. A line drawn along the surface of the earth from one of these points to the other, deflects from the meridians by an angle of 54° 20′, and is 13,857 statute miles in length.

Cape Horn, or the extreme southern point of America, is at S. lat. 56° and long. 67° 46′ W. from London. A line drawn between these points deflects from the meridians by an angle of 31° 38′, and within a very small fraction of 10,000 miles. These two lines if extended into the southern hemisphere will intersect in the great southern ocean, and will enclose all America, Europe, Africa, and the far greater part of Asia.

A direct line from Bhering's Strait to Cape Horn bears S. 59° W. 16,560 miles, and with the American line between the same points forms an angle at Cape Horn within 38 minutes of a right angle. The

two continents, therefore, from Bhering's strait retire from each other very nearly at right angles. The Asiatic line from Bhering's strait in its progress south-westward traverses the peninsulas of south-eastern Asia, and crosses the equator almost exactly on the eastern coast of Africa; and thence crossing the latter continent obliquely, leaves full four-fifths of the surface and all the great mountain chains of the eastern continent to the north-west.

The two great triangles I have sketched serve to demonstrate how very nearly the two continents range at right angles to each other. The larger triangle embraces about the twelve-thirteenths of all the land of the earth.

In the formation of a sound theory of climate, the form and relative position of the parts are, however, as necessary to be understood as the position and bearing of the whole. It is worthy of serious attention that a tendency to the triangular form, with a salient point southward, and one side extending from north-east to south-west, prevails over the whole land surface of the earth, but in a particular manner in America. A glance on a general map will render this feature evident on the large scale in the case of Asia, Africa, and the two Americas; but it is equally obvious in the instances of Spain, Scandinavia, Greece, Arabia, Indostan, Malacca, Cambodia, Corea, and Kamschatka. These peninsular projections afford highly satisfactory proofs of a systematic arrangement of parts. To render this important fact in physical geography still more apparent, I have calculated the following lines of coast, and placed the results before the reader in a tabular form.

No. XXXI.—*Table of the deflection from the meridians, and lengths, of the principal Coasts of the earth, and also of the range of the great continents.*

Coasts.	Bearing.	Length.
1. General course from Behring's Strait to Cape Horn, over the Pacific ocean, parallel to America	31°38′	10,000
2. Range of the continent of America from the mouth of the Unjiga to that of the Rio de la Platte	30 32	8,410
3. General course from the mouth of Sir James Lancaster's Sound, in Baffin's Bay, through Davis' Strait, and nearly touching Cape Palmas, to the Cape of Good Hope in Africa	33 42	8,944
Lines in the contrary direction.		
4. Line from Cape Tehuantepec to the southern point of the islands of Spitzbergen - - -	47 44	6,390
5. Line drawn along the south-east coast of North America, from Cape Florida to the straits of Belle Isle	35 51	2,654
6. South-east coast of South-America, from Cape St. Vincent to Cape St. Roque - - - - - -	26 30	3,867
7. Course from Cape Horn to the North Cape of Europe - -	29 00	10,150
8. Course from Cape Horn to the Northern Cape of Asia -	40 27	12,240
9. Coast of Africa and Europe, from Cape Verd to North Cape -	24 42	4,232
10. South-eastern coast of Europe, from Cape Metapan to the mouth of the Dnieper - - -	36 36	920
11. General range of the coasts of Africa and Arabia, from the Cape of Good Hope to Cape Ras -	30 00	5,200

Coasts.	Bearing.	Length.
13. South-eastern coast of Indostan, from Cape Comorin to the mouth of the Ganges - - -	36 39	1,172
13. Coast of Asia, from the south-eastern point of Cambodia to the mouth of the Amur - -	36 21	4,066
14. Entire south-eastern coast of Asia, from the south point of Malacca to Bhering's Strait - - -	45 00	6,266

In these examples the three first exhibit the range of America and south-west Africa, and differ from each other in their inflections to the meridians only 3° 10′. The eleven next examples deflect from the meridians in the opposite direction, or from north-east to south-west. Here it may be noticed that the individual south-east coasts, from that of North America to that of Asia inclusive, preserve a parallelism to within 23½ degrees, and what is more remarkable, that the two main and extreme coasts, at a distance of 6880 miles asunder, decline from each other only 2¾ degrees.

If examined in relation to their intersection with the different points on the earth's surface, the first of these lines, with the exception of the peninsula of Oonalaska, traverses the Pacific ocean, but parallel to the general range of America.

No. 2 leaves the mouth of the Unjiga, follows the basin of that river, and the south-western part of that of the Mississippi, crosses the western part of the Gulf of Mexico, passes obliquely over the isthmus which extends between the two Americas, intersects the equator and the western coast of South America almost at the same point, and ranges thence over the sources of the Amazon, and down the valley of the Platte to its mouth.

No. 3 demonstrates the curious fact, that the range of America and that of south-western Africa

are within a small fraction of two degrees of being parallel.

No. 4, extending from Cape Tehuantepec, of the south-western coast of North America, to Spitzbergen, traverses the peninsulas of Yucatan, Florida, and Nova Scotia, passing along the south-east coast of the United States and that of Greenland.

Nos. 5 and 6 point out the particular bearing of the south-east coast of North and South America, which it may be observed deflect from each other only 9° 21′.

No. 7 is a very important geographical line, and shews the near approach to parallelism in the opposing coasts of Europe and north-west Africa, to the opposing coasts of North America.

No. 8 serves a similar purpose with No. 7, but in the latter case extending the comparison to the utmost northern limit of Asia. These two lines, with those along the south-east coast of North America, are of the utmost value as elements in the philosophy of the climates of both continents.

Nos. 9, 10, 11, and 12 were calculated to illustrate the systematic arrangement of the different and distant sections of the earth.

Nos. 13 and 14, like 7 and 8, serve as means at once to demonstrate regularity of arrangement, and to aid in the formation of a rational meteorological theory.

Though the actual lines of contact between land and water are of most importance, there are other features of nature the knowledge of which is indispensable to a due comprehension of the analogies of aerial revolution. It has been found from experiment that the atmosphere decreases in temperature according to its elevation above the general oceanic level; it seems also that the atmosphere regards the laws of gravitation as well as water; therefore, whether land rises rapidly into mountain peaks, or slowly and extensively by continental table lands,

the effect is the same specifically. In the case of elevated and extended plateaus, the sun's rays being radiated, lessens in some degree the refrigeration occasioned by height; but on all places, at a sufficient elevation, vegetation is succeeded by perpetual frost. On the other hand, within the tropics, frost cannot take place where the high temperature of the oceanic level is not lessened by elevation. The following table, liable (as the author acknowledges) to local exceptions, gives a general view of aerial temperature depending on relative height, as high as N. lat. 40°.*

No. XXXII.—*Table of the height above the ocean, and mean temperature, which admits perpetual Snow.*

Northern Latitude.	Lowest height at which snow falls.	Inferior limit of perpetual snow.	Difference of the two preceding columns.	Mean temperature Fahrenheit's Thermom.
	Feet.	Feet.	Feet.	
0°	13041	15714	2673	80.6
20	9905	15088	5183	70.7
40		9840	9840	62.6

Though this table as it imports was calculated for N. lat., it will serve also to give ideas sufficiently correct for common purposes, of similar phenomena and latitudes on the contrary hemisphere. Snow, however, falls annually at the level of the ocean in the United States as low as N. lat. 35°, and occasionally as low as 30°; such again is the case on south-eastern Asia; the causes of this seeming anomaly will be explained in the sequel.

* Humboldt's Personal Narrative, p. 119. M. Carey, 1815.

The laws upon which climate depends are few and simple.

1. All places on the same parallel of latitude, and at a like height and exposure, must have similar temperature.
2. Places on the same parallel of latitude, have difference of aerial temperature, if the places themselves differ in relative height, or exposure.
3. Difference of exposure arises from different terrestrial inclination, proximity to, and bearing from, extensive bodies of land, from mountains, or from collections of water.
4. Mountains and oceanic collections of water, exert a directly contrary influence on aerial temperature; the former tending to produce extremes of cold, the latter to reduce the atmosphere to a uniform annual temperature.
5. The atmosphere forming a part of the planet, is carried daily round the axis with the other bodies on the earth's surface; consequently, what is called wind, is a mere deviation from the natural motion of the air, caused by changes of temperature.
6. Land and water being always unequally acted on by an equal degree of heat, changes of temperature are constantly recurring near sea-coasts; and these changes are mostly in a near ratio with the relative extent of contiguous land and water.
7. The natural motion of the air being from W. to E., if the earth's surface was composed of uniform matter, or matter reflecting the rays of heat equally, wind at any given place would be uniform in its direction, as is the case on wide oceans, and continents at considerable distances from the lines of contact between land and water.

From the preceding laws, if the mean temperature of any place can be accurately determined, that of others not only contiguous, but at considerable distances can be determined, by having the latitudes

and difference of elevation given. In Europe it has been shown, that a change of elevation of 338 feet or 100 metres is equal to a degree of Fahrenheit, and that a similar difference of temperature arises from a degree of latitude. Such allowances seem too artificial to be any where very correct, and are, in the United States, too small in the former and too great in the latter case; but as it is impracticable to arrive at great precision on the subject, I have used 400 feet, and one degree of latitude, as coming nearer the result of observation, than any other elements I have compared with the tables. The explanation of this principle in meteorology will be again resumed.

Having thus premised the laws on which general temperature depends, we now return to a review of the great land protuberances, and the range and mass of mountain systems. Under this head will be included, not merely those prominent ridges called mountains, but also, those extensive and elevated plateaus, or table lands, which, particularly in North America and Asia, so greatly influence the temperature of the seasons of countries lying to the southeast of them.

Each continent has a predominant system of mountains, of immense mass and length, with many minor systems and chains. If a point is chosen in Central Asia, at about 83° E. from London, N. lat. 47°, and on the sources of the Oby, a distance of about 1875 miles will reach north in the Arctic ocean, at the mouth of the Oby; west into the Caspian; south into the Bay of Bengal; and east into the Yellow Sea. This is the most remote point of land on the earth from the contiguous oceans, and spreading from it, is the most elevated and extended table land. This great plateau is surrounded by a mountainous rim, from which are protruded mountain chains; the Stavonoy to the north-east, terminating at Bhering's strait; the Ural stretching

north, between Europe and Asia; the Himmelaya towards Indostan; and the chain of Caucasus towards southern Europe.

From this enormous plain, the continent of Asia slopes on every side. Its great rivers are found winding their way in immense volumes from one to two thousand miles in length, to the Arctic, Indian, and Pacific oceans. The central plateau is in great part destitute of timber, and being elevated from 5000 to 12000 feet, spreading over more than 3,000,000 square miles, is the most bleak, and, for its latitude, the most uninhabitable tract in the northern temperate zone of the earth.

A zone, bounded to the N. by the wooded mountains of Altai, and to which lat. 50° is about the central or middle line, is a timbered band, extending from Europe to the sea of Ochotsk, about from 8° to 10° of latitude wide, and followed on the north by an inclined plain, naked, level and marshy, terminating in the Arctic Ocean.

On the south east towards the Indian and Pacific Oceans, stretches from the Arabian Gulf to the sea of Ochotsk, a fine arable slope, comprising the Makran, the two Indias, China, and Mandshuria, with the Japan Isles. It is this great slope which of all others on the earth, bears in every respect the strongest resemblance to the United States.

As far to the westward as the valley of the Don in Europe, commences those steppes or arid plains, which with an almost perfect resemblance to the prairies of North America, extend to, and are lost in the desolate expanse of central Asia.

On the south-west, the desert regions of Mongolia are terminated by the fertile valleys of the Oxus and Sihon, which in turn are succeeded by the mingled deserts and gardens of Persia, and still further by the burning sands of Arabia.

Such is the vast continent of Asia, from which is protruded westward, a much broken peninsula, to

which the course of civilization has given a moral and political identity, separate from the continent of which it naturally forms a minor part. Europe is bounded south by the deepest gulf on the eastern continent, on the west by the Atlantic, and north by the Arctic Ocean.

South-west from Asia, and south from Europe, spreads the continent of Africa. Asia is cut longitudinally into two not very unequal parts, by a meridian, about 100° E. from London. Along this meridian, the continent extends on both extremes, into points, the northern reaching N. lat. 76° and the southern almost touching the equator.

If Africa and Europe are taken together, a second meridian, about 90° W. from that of Asia, will be again rendered remarkable, by salient points towards each pole. On the African and European meridian, the land stretches in continuity to the 35th S. lat.

Similar to Asia and Europe, the mountain systems of Africa are ranged, as far as known, from east to west; but as the particular geographical features of the latter are irrelevant to an explication of the climate of the United States, any further examination of its interior structure will be omitted in this view.

Westward of the Eastern continent, curves the Atlantic Ocean, the only considerable aquatic communication between the polar extremities of the earth. The Atlantic in its narrowest part between Europe and Greenland, is upwards of one thousand miles wide, and opening thence S. W. with the general range of the bounding continents, spreads under the northern tropic, to a breadth of 60 degrees of longitude or 4170 miles, without estimating the indenting of the Gulf of Mexico. Over the torrid zone, the Atlantic inflects to N. W. and S. E., again complying with the bearing of the adjacent conti-

nents, which, as we have seen, correspond with great exactness to each other.

The Atlantic Ocean and its gulfs, occupy about the 1-7th part of the superficies of the earth, curving round the western, southern and northern part of the eastern continent, from 72° of N. lat., to 35° of S. lat., or through 107 degrees of latitude. This immense strait is limited on the west by the most lengthened land line, extending north and south, that can be drawn on the planet. Without including Greenland, or the unknown regions around the northern pole, America stretches from the 72nd degree of N., to the 56th of S. lat., or through 128 degrees of latitude.

From the recent discoveries made by authority of the British government, Greenland may be considered as detached from America, and might from its extent, deserve the rank of a separate section, in regard to physical geography; but in disquisitions on climate, and particularly the influence it may have in modifying the prevalence of cold in winter over the United States, Greenland ought to be included with the mass of North America. In reality, whatever narrow inlets and islands may exist north from North America, the whole surface of the polar circle, and far into the northern temperate zone, is in winter converted into one immense sweep of ice and snow. Thus extended, the continent of America reaches into a *Terra Incognita*, and is actually lost to human research.

The range and relative extent of America, have been already stated. Beside the imperfectly explored peninsula of Greenland, America rises from the circumjacent oceans, by two great land protuberances, called relatively North America and South America.

South America though peculiar in some of its features, bears a general resemblance in structure to its counterpart. On the western border the Andes

rise into greatly elevated mountain chains, peaks, and narrow plateaus. From this protracted buttress, through 66 degrees of latitude, the rivers are poured to the east and south-east in three principal and many minor streams. Following nearly the course of the opposing Atlantic coast, a comparatively humble system of mountains stretches between the estuaries of the Amazon and Platte rivers. Taken as a whole, South America is composed of two exterior but unequal mountain walls, with an immense central valley drained by the Orinoco, Amazon and Platte rivers, the whole outline presenting a strong resemblance to that of Africa.

United to South America by a very attenuated strip, North America, similar to other large sections of the earth, projects a salient point southward, and dilates into a triangle northward. With much diversity of interior structure, the great south-eastern outline of North America conforms in its bearing to almost minute exactness with the corresponding part of Asia, whilst in regard to their respective mountain systems, the two Americas have strong traits in common. In North America, we find as in South America, two unequal systems of mountains. It remains an undecided problem, whether the great western system of mountains on the former is, or is not a continuation of the Andes of the latter continent. Leaving the question of their union or separation undetermined, a system of mountains originating on the peninsula, between the two Americas, extends in almost exact conformity to the general bearing of North America, from Tehuantepec to the Arctic Ocean. Rising in Mexico, into vast volcanic peaks, and stretching across the territory of the United States in elevated lateral ridges, this system is known by various names. In Mexico it is designated Anahuac; in the United States, the Rocky mountains; and in the still more north-western extension, the Chippewayan range. The

height of this vast system, except in the vicinity of Mexico, has never yet been ascertained, but from the length of the rivers flowing from its base, that base cannot fall short of 5000 or 6000 feet. Whatever may, however, be its relative height, this system traverses the whole continent of North America, from the Gulf of Mexico into the Frozen Ocean, dividing it into two unequal inclined plains. The plain towards the Pacific, from one hundred to a thousand miles wide, is drained by two main rivers the Columbia and Colorado, with numerous smaller streams.

North-east from the principal system of its mountains, North America is again very unequally subdivided by another system, the Appalachian. The latter, although in every respect comparatively humble when compared with the stupendous systems of Asia, Africa, the Andes or Chippewayan, gains an intense interest in the United States from local position. Conforming like the secondary system of South America, to the opposing Atlantic coast, the Appalachian, composed of lateral chains, extends in broken fragments from near the Gulf of Mexico, towards, and approaching that of St. Lawrence, with a height from 600 to 6 or 7000 feet.

The two North American mountain systems, range at very nearly right angles to each other, leaving between them the vast central basin of the Mississippi. The basin of that river expanded as it is, however, forms only the principal section of an interior valley, terminating south-eastward in the Gulf of Mexico, north-westward in the Arctic Ocean, north-eastward in Hudson's bay, and eastward by the Appalachian system of mountains.

Thus, if taken into one point of view, North America is composed of two unequal slopes, falling from its mountain systems towards the Pacific and Atlantic oceans, each of the slopes having an extent in a near ratio with the mountain mass from which

it depends. The wide intervening valley occupies, next after the western slope, the far larger part of the continent, stretching from the Gulf of Mexico, to the Arctic Ocean, and itself again composed of two inclined plains, sloping from the two mountain systems. As is the case in respect to the two exterior ocean slopes, the extent relatively of the two interior plains corresponds to the size of the mountain masses. That falling from the Chippewayan drained by the western confluents of the Mississippi and Saskatchewaine and the entire streams of the Unjiga, is upwards of three thousand miles in length, and averages from 500 to more than one thousand miles wide, covering at least 2,500,000 square miles, and varying in elevation from the oceanic level to 8 or 10 thousand feet.

The eastern or Appalachian slope, descending from the latter system, is from south-west to north-east, about 1000 miles, with a mean width of 300, extending over at most 300,000 square miles. If these comparative estimates are correct, the two sections of the great central valley of North America, differ in area rather more than 8 to 1. The wide disparity of superficies is not, nevertheless, the most important contrast presented by the two interior inclined plains. When the cultivation of North America by Europeans was commenced, a dense and continuous forest of excessively heavy timber spread over and around the Appalachian system of mountains. This great forest extended from the Gulf of St. Lawrence to that of Mexico, and from the shores of the Atlantic Ocean, beyond the main volume of the Mississippi. This ocean of woods, still in the far greater part existing, may be considered as about 2000 miles in length, with a mean breadth of 1000, and comprising 2,000,000 of square miles, and limited either by the Atlantic ocean, the Gulf of Mexico, or by naked interior plains.

The western slope of the interior valley of North America with a considerably greater extent than the Appalachian forest, is with partial exceptions composed of naked plains, bearing all the characteristic marks of the steppes of Asia,* and having a still more close resemblance in relative geographical position.

It is commonly, but very erroneously supposed, that the prairies of America are level or nearly so. This is far, however, from being their general physiognomy. In Louisiana the prairies are indeed level plains, but in the great western territory exhibit much diversity of surface and of soil, from alluvial flats to rugged mountain chains; and such are also the steppes of Asia.

We have now briefly sketched the outlines of those parts of the earth, and those laws of meteorology which are necessary to a development of the particular climate of the United States, and proceed to their application.

It has been already premised, that the natural motion of the atmosphere was that of the earth round its axis. The earth revolves round its axis once in 24 hours, very nearly; consequently, 15 degrees of its meridians are moved in an hour of time. The maximum of motion being at the equator, lessening along the meridians, and becoming nothing at either pole. The following table shews the hourly motion of the curves of latitude, at each 10 degrees from the equator.

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* Tooke's Russia, London 1800. Vol. I. page 74.

No. XXXIII.—*Table of a Degree of Longitude, and the hourly motion round the axis of a particle of matter on each* 10*th degree of Latitude, from the Equator to either Pole.*

Degrees of Latitude.	Breadth of a degree of Longitude.	Hourly motion in miles.
0	69.7	1036
10	67.95	1019.2
20	64.84	972.6
30	59.75	896.25
40	52.85	792.75
50	44.35	665.25
60	34.50	517.50
70	23.60	354
80	11.98	180
90	00.00	000

From this table it is seen, that on latitude 40°, nearly the middle latitude of the United States, particles of matter are carried round the earth's axis, 792¾ miles hourly. Besides the aquatic, the earth is enveloped by an aerial ocean of great depth, and composed of matter liable to indefinite expansion and contraction, from heat and cold. It is usual to regard the atmosphere, as a mere adjunct, when estimating the size of this globe, though, in either a geographical or philosophical view, the aerial, as completely as the aquatic ocean, is a part of the planet, and if so, both are carried round the axis with the decumbent nucleus. This motion on the equator, is more than twice the velocity of a cannon ball, and exceeds that projectile to above lat. 50°. By the inherent laws of gravitation, if any, the least retardation is produced on the aerial or fluid masses, in the direction of their common motion, a counter current must be produced.

"When we cast an eye over the Atlantic, or that

deep valley which divides the western coasts of Europe and Africa, from the eastern coasts of the New Continent, we distinguish a contrary direction in the motion of the waters. Between the tropics, especially from the coast of Senegal to the Caribbean sea, the general current, that which was earliest known to mariners, flows constantly from east to west. *This is called the Equinoctial Current.* Its mean rapidity, corresponding to different latitudes, is the same in the Atlantic and Southern ocean, and may be estimated at 9 or 10 miles in 24 hours; consequently from 59 to 65 hundredths of a foot every second of time."*

This great observer, subjoins to the above, in a note:

"In comparing the observations which I had occasion to make in the two hemispheres, with those which are laid down in the voyages of Cook, La Perouse, D'Entrecasteaux, Vancouver, Macartney, Krusenstern, and Marchand, I found that the swiftness of the general current of the tropics, varies from 5 to 18 miles in 24 hours, or from one third to one and two tenth feet per second."

Comparing the two following documents with the accompanying chart, will enable the reader to trace the course of the Equinoctial current, and that from the ship Ospray, the line of separation of the two great masses of this ocean flood.

FROM LATE LONDON PAPERS.

Currents of the Ocean.—By the kindness of a friend, (says the Glasgow Courier,) a document has been put into our hands, which was enclosed in a bottle and thrown into the sea just twelve months ago. It was taken up on the shores of Martinique, on the 4th of February last. The bottle had thus travel-

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* Humboldt. Personal Narrative, page 63.

led a distance of 2500 miles in about ten months, 250 miles per month, or 8 miles per day. We give a copy of this instructive document, with the notice subjoined:

"The bottle which contains this card was thrown into the sea in lat. 5° 12′ S., long. 24° 40′ W., at noon on the 29th day of March, 1820, from the ship Ospray, of Glasgow, which sailed from Greenock on the 20th of February, on a trading voyage round the world. Whoever finds this, is requested to insert a notice of the time and place in some literary or political publication, with the view of establishing facts relative to the currents of the ocean. All well."

This bottle was found on the 4th of February, 1821, near the eastern point of the Salines Quarter of St. Ann's, Martinique, in the best order, as will be seen by this paper which it contained.

St. Pierre, Martinique, 13*th Feb.*, 1821.

Signed, T. BOURANT,

Printer and Director of the General Post Office, Martinique.

Poulson's Daily Advertiser, May 16*th*, 1821.

Currents of the Ocean.—About ten days ago, a bottle was picked up by Mr. Samuel Knowles, on the N. E. side of Eleuthera, in about lat. 25° 30′, and long. 76° 20′, containing a slip of paper, on which was written—"United States' frigate, Congress, May 24, 1821. Homeward bound from China. Lat. 27° 51′ N., long. 66° 50′ W. All well.

J. H. S.
E. P."

Freeman's Journal, 22*nd February*, 1822.

If the reader will turn to the small chart appended to this view, and suppose the whole surface in motion eastward, and at the same time reflect, that the real motion to the east must produce an apparent

motion of the sun in a contrary direction, and that this solar motion is even at its minimum over the tropics, upwards of 950 miles hourly, he will at once perceive another cause of retrograde aerial motion. It will be obvious that a vacuum must be produced in the atmosphere, immediately under the sun, and that this rarefied body must be removed westward. It is this aerial current which has received the appellation of Trade Wind *(Le Vent Alizé of the French)*.

The two currents of the water and air moving in the same direction, the inequalities in the motion of that of the ocean, there is little doubt, are in great part the effects of unequal intensity in that of the atmosphere. Both acting, however, in aid of each other, are, though irregular in their rate of motion, constant in their direction, and combine to produce one of the most remarkable amongst the phenomena of physical geography.

The western equinoctial current is felt, though feebly, as high as N. lat. 28°, and about as far south, though it must be in excess along the equator. The eastern salient point of South America, being upwards of 6° of S. lat., the great mass of ocean flood is unequally divided. South from Cape St. Roque, the current is turned down the coast of South America, and between S. lat. 30° and 40°, reacts towards Africa.

North from Cape St. Roque, the coast of South America bends to a general course of N. 62° W., and with the Caribbean sea and the Gulf of Mexico, maintains that direction to the mouth of the Rio Grande del Norte, 2560 miles. Along this coast the equinoctial current is inflected northward, and augmented by constant accumulations from the east. The whole body pouring through the various inlets between the Windward Islands of the West Indies, into the Caribbean sea, and thence, between Cuba and Yucatan, into the Gulf of Mexico. In the latter

reservoir it has reached its utmost elevation, and again rushes out into the Atlantic ocean through the Cuba, and Bahama or Florida channel, and sweeping along the coast of the United States and Nova Scotia, about N. lat 50° meets the Arctic currents from Davis' Straits; and from the Northern Atlantic ocean, is turned towards Europe and north-west Africa, and is finally merged in its original source within the tropics. To this oceanic river has been given the name of GULF STREAM. It is the second most extensive, and much the most strongly marked whirlpool on the globe, having an outline of about 15,000 miles.

The mean motion of the Gulf Stream is no doubt changeable, even at the same points; its periodical revolution has been found about 2½ years, and the maximum of motion in the Bahama channel. M. Humboldt notices this phenomena thus: "In the Florida channel, I there observed in the month of May, 1804, in the 26th and 27th degrees of latitude, a celerity of 80 miles in 24 hours, or five feet every second, though at this period the north wind blew with great violence. At the end of the Gulf of Florida, in the parallel of Cape Cannaveral, the Gulf Stream or current of Florida, runs to the north-east. Its rapidity resembles that of a torrent, and is sometimes five miles an hour."*

Such a mass of ocean water flowing constantly from the torrid zone towards the northern pole, and at any given latitude, heated many degrees above the temperature of the adjacent ocean, must exert great influence on the atmosphere. This influence is made manifest by the following table:

* Personal Narrative, page 65.

No. XXXIV.

Table of Temperature of the Seas in both Hemispheres.

Latitude.	Longitude from London.	Period of the observation.	Temp. of the ocean at its surface.	Oceans.	Names of the observers.
3°53′N	90°26′W	Feb. 1803	83°.6	S. Sea	Humbt.
3 16 S	86 23 W	Jan. 1803	80.6		Idem.
4 8 N	22 54 W	Oct. 1788	81.5	Atlan	Churruca
3 44 S	28 10 W	Nov. 1788	80.6	tic	Idem.
4 36 N	53 50 E	May 1800	81.7	Ind. Sea	Perrins
4 44 S	24 51 W	April 1800	79.5	Atlantic	Idem.
11 12 N	37 34 W	April 1800	80.8	—	Quevedo
11 32 S	29 41 W	March 1803	80.6	—	Idem.
11 58 N	25 46 W	March 1800	73.8	—	Perrins
12 30 S	27 20 W	April 1800	78.4	—	Idem.
15 24 N	39 44 W	April 1803	74.8	—	Quevedo
15 50 S	30 34 W	March 1803	79.9	—	Idem.
23 0 N	26 50 W	March 1800	69.8	—	Perrins
23 40 N	41 6 W	April 1803	71.8	—	Quevedo
22 52 N	22 13 W	June 1799	68.0	—	Humbt.
23 28 S	29 40 W	April 1800	75.9	—	Perrins
23 30 S	50 10 E	May 1800	71.6	Ind. Sea	Idem.
31 6 N	79 37 W	May 1804	70.7	Atlantic	Humbt.
31 22 N	15 7 W	Oct. 1788	74.5	—	Churruca
31 58 N	20 10 W	March 1800	63.9	—	Perrins
31 30 N	38 45 W	April 1803	69.3	—	Quevedo
31 34 S	28 29 W	March 1803	75.7	—	Idem.
31 0 S	26 20 W	April 1800	68.9	—	Perrins
31 34 S	46 56 W	Nov. 1788	68.9	—	Churruca
31 4 S	47 40 E	May 1800	66.9	Ind. Sea	Perrins
36 38 N	41 2 W	May 1803	66.7	Atlantic	Quevedo
36 5 N	76 41 W	May 1803	68.0	—	Humbt.
36 4 N	17 5 W	June 1799	59.4	—	Idem.
33 16 N	10 24 W	Oct. 1788	72.3	—	Churruca
35 22 S	50 32 W	Nov. 1788	63.0	—	Idem.
36 3 S	17 8 W	April 1800	65.8	—	Perrins
36 5 S	41 58 W	May 1803	68.0	—	Quevedo
33 52 S	94 52 W	Feb. 1803	71.6	S. Sea	Idem.
40 28 N	33 35 W	May 1803	62.8	Atlantic	Idem.
40 30 N	68 36 W	July 1804	65.7	—	Humbt.
42 34 N	15 45 W	Feb. 1800	57.6	—	Perrins
42 30 S	50 30 W	March 1803	55.8	—	Quevedo
40 36 S	48 20 W	March 1803	59.9	—	Idem.
40 48 S	93 56 W	Feb. 1803	62.6	S. Sea	Idem.

In the progress of our meteorological survey, we shall find some remarkable contrasts between the temperature of the waters of the Atlantic Ocean, and that of the atmosphere of the United States, on similar latitudes. Table No. 34 was extracted from Brewster's Encyclopœdia, article Navigation, and was compiled for that work, from Humboldt, and had it been accompanied by a table of prevalent winds, the two taken together would have been invaluable; but as it is, though confined to the temperature of the ocean water, the data are powerful aids in fixing the basis of a true theory of general climate. I have already premised, that to comprehend the aerial revolutions of any one portion of the earth, its meteorology must be taken in connexion with that of adjacent regions. It is for these considerations, and to afford points of comparison, that I precede the particular tables on the United States, by general tables of temperature on and near the eastern margin of the Atlantic ocean.

No. XXXV.—*Table of the monthly mean temperature at Santa Cruz, in the Island of Teneriffe, N. lat.* 28° 27′, *long.* 16° 26′ *W. from London,* 60° 29′ *E. from W. C., by Don Francisco Escolar, from May* 1808, *to Aug.* 1810.

	Reaumur.	Fahrenheit.
January	14.15	63.07
February	14.35	64.03
March	15.63	67.01
April	15.70	67.02
May	17.83	72.01
June	18.62	73.08
July	20.12	77.02
August	20.84	78.09
September	20.19	77.04
October	18.96	74.05
November	17.08	70.04
December	15.03	65.09
Mean of the year	17.39	70.63

During the summer months, the climate of the Canaries is assimilated by the winds to the region of the tropics. From April to October, the north-east Trade wind prevails uninterruptedly. During the remaining months, it partakes of the character of the zone without the tropics by the general prevalence of south-westerly winds.*

If we compare the elements in table 38, page 370, with the note to No. 35, it must be evident that the south-west and north-east winds are real monsoons. M. de Vassalli attributed the course of prevalent winds at Turin, to the course of the Po, at that city; but when we take the Turin table and compare it with other tables in this chapter, it cannot be rationally doubted, but that south-west and north-east winds depend, for their predominance, upon some cause more general than mere locality of surface. These winds alternate, at not very variable periods, from the Gulf of Mexico, in America, to Turin, Paris, London, and into Eastern Europe.

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* Quarterly Journal of Science, April, 1808.

No. XXXVI.—*Table of the temperature of Air over, and Water of, the Gulf Stream, from observations made by John Hamilton.* See Table XXXVII. A. P. Transactions, New Series, Vol. II. page 145.

Month.	N. lat.	W. long. from London.	Long. from W. C.	Tem. of air.	Tem. of watr.
April 21	32° 15′	77° 18′	00° 23′ E.	70	72
February 15	32 40	78 09	1 14 W.	65	71
April 22	34 16	75 07	1 48 E.	61	71
September 5	34 42	69 38	7 17	79	81
6	35 58	71 05	5 50	76	78
October 23	35 38	73 23	3 32	63	73
September 28	36 50	66 57	9 58	67	77
March 3	36 40	72 11	4 44	69	72
May 2	36 49	71 42	5 13	68	74
March 29	37 39	67 20	9 35	60	71
September 26	37 42	71 07	5 47	67	73
29	37 27	64 02	12 53	65	76
May 2	37 54	68 00	8 55	54	70
December 23	37 22	70 10	6 45	53	72
24	37 39	69 00	7 55	67	72
25	37 56	67 00	9 55	63	69
May 30	37 36	68 42	8 13	71	73
December 21	37 49	63 45	13 10	59	63
22	37 47	60 10	16 45	62	63
23	37 54	56 15	20 40	60	63
October 31	37 34	61 39	15 16	71	70
May 5	37 49	68 58	7 57	53	67
6	37 34	66 59	9 56	55	68
7	37 52	64 24	12 31	57	67
March 30	38 04	64 23	12 32	69	70
September 30	38 05	62 00	14 55	69	77
May 4	38 02	61 15	15 40	61	69
5	38 09	57 50	19 05	68	69
December 26	38 30	64 21	12 34	59	70
27	38 26	61 33	15 22	61	70
June 1	38 25	62 00	14 55	65	70

Month.	N. lat.		W. long. from London.		Long. from W. C.		Tem. of air.	Tem of watr.
June 2	38°	20′	59°	36′	16°	19′ E.	64°	69°
3	38	28	58	23	18	32	65	72
July 27	38	30	68	26	7	29	72	72
June 10	38	40	65	35	10	20	70	73
11	38	43	61	35	5	20	71	71
November 1	38	54	57	46	19	09	71	71
5	38	52	52	22	24	33	67	68
December 1	38	03	67	17	8	38	60	68
October 1	39	13	58	13	18	42	71	76
February 21	39	01	53	10	23	45	54	64
December 28	39	02	57	07	19	48	63	66
29	39	34	54	46	22	09	57	67
June 7	39	37	48	41	26	14	69	71
July 29	39	02	66	51	10	04	73	70
30	39	12	69	44	7	11	75	73
31	39	41	63	39	12	16	77	74
October 7	39	14	48	54	26	01	57	67
March 17	39	59	58	00	18	55	57	58
May 24	39	57	61	03	15	52	65	68
November 4	39	06	52	30	24	25	66	68
October 2	40	06	56	37	19	18	69	70
3	40	45	56	22	20	33	62	70
July 31	40	39	41	35	35	20	75	75
August 1	40	06	42	56	33	59	75	77
2	40	15	43	43	33	12	76	76
3	40	49	45	05	31	50	76	76
1	40	20	60	32	6	23	77	76
2	40	52	57	19	18	36	74	72
29	40	27	64	23	12	32	64	73
30	40	06	65	03	11	52	67	73
31	40	58	65	56	10	59	70	70
September 1	40	33	67	11	9	44	69	71
October 13	40	46	65	09	10	46	55	69
14	40	42	65	29	11	26	59	73
July 1	41	20	57	22	19	33	64	74
October 4	41	14	53	57	22	58	66	71
16	41	10	41	07	35	48	60	65
September 16	41	41	54	51	22	04	70	75

No. XXXVII.—*Table of the prevalent winds over the North Atlantic Ocean, from observations made by John Hamilton, during* 26 *voyages made to and from Europe, principally between Philadelphia and Liverpool, between the years* 1799 *and* 1817, *inclusive.* American Philosophical Transactions. New Series, Vol. II. page 140.

Month.	No of Yrs. of observation.	No. of Days.	W.	N.	S.	E.	Variable.
January	5	98	45	20	8	15	10
February	5	135	69	13	19	22	12
March	10	198	105	22	19	38	14
April	9	234	150	31	11	25	17
May	11	264	132	27	22	64	19
June	6	172	88	8	23	33	20
July	7	125	70	12	12	21	10
August	9	223	129	18	16	29	31
September	7	159	75	28	10	28	18
October	4	144	83	14	5	26	16
November	5	98	60	6	5	23	4
December.	8	179	95	9	17	37	21
			1101	208	167	361	192
Reduced to proportions of 1000.			$\frac{542}{1000}$	$\frac{102}{1000}$	$\frac{82}{1000}$	$\frac{177}{1000}$	$\frac{94}{1000}$

From table 37 it appears that on the open Atlantic Ocean, between America and Europe, and between N. lat. 35 and 55, western winds prevail more than half the year. In the composition of the table, all the winds between N. N. W. and S. S. W. inclusive, are called westerly; and those from the other points of the compass are named from the cardinal points in a similar manner. This table supplies the deficiency of the winds in table 34.

No. XXXVIII.—*Table of the mean temperature and prevalent winds at Turin, Italy, on the left bank of the Po, 7° 45′ E. from London, N. lat. 45° 04′ ; 839 feet above the Mediterranean : from observations made by Vassalli Eandi and inserted in the Transactions of the Royal Academy of Turin.*

Year.	Mean Temp.	N. E.	N.	N. W.	W.	S. W.	S.	S. E.	E.
1809		343	81	41	46	344	86	71	89
1810		372	67	58	51	359	52	69	69
1811		325	78	43	62	368	88	52	79
		1040	226	142	159	1069	226	192	237
	Mean of 3 years.	$346\frac{2}{3}$	$75\frac{1}{3}$	$47\frac{1}{3}$	53	$356\frac{1}{3}$	$75\frac{1}{3}$	64	79
	Reduced to proportions of 1000.	313.2	68.6	61.6	48	311.2	69	58.6	71

The city of Turin is situated in one of the deep river vallies of northern Italy, having the Appenine mountains south and south-east, and the massy system of the Alps sweeping round from the Appenines, first north and then east ; the two systems enclosing

the city on three sides, leaving it only open to the east by the valley of the Po. The infrequency and very nearly equal quantity of north and south winds are remarkable in almost every one of the tables in this chapter; tables representing the winds from the central and western regions of North America, 50° W. of W. C. as far as the city of Turin, 7° 45′ E. from London, 84° 40′ E. from W. C., or through 134° 40′ of longitude, with the Atlantic ocean, and the Chippewayan, Appalachian, Pyrennean, and Alpine systems of mountains intervening.

"On the north-east coast of Asia, the prevailing wind is from the west," says Professor Playfair, in the Introduction to his Geography. "In Great Britain, the south-west is by far the most frequent wind. In April, May, and part of June, the east wind is common, especially on the east coast of the island. In Ireland, the south-west and west are the Trade winds. On the south-east of Europe, the most frequent winds are the north, north-east, and north-west. In the interior parts which are contiguous to the Atlantic ocean, the south-west wind is frequent, but in Germany eastern breezes prevail." It will appear from comparing the elements in table 38, with those of other tables in this chapter, that Turin is about the point in Europe, where the western winds are nearly balanced by currents from the great plateau of Asia; and it will appear also, that the winds of Turin cannot be very sensibly inflenced by local causes, as, if so, the prevalent winds must have been at that city, from the cold region of the Alps, towards the warm bosom of the Mediterranean. In reality, the conformity of the aerial currents over so great, and so diversified a surface, as that from the mouth of Columbia, to the sources of the Po, is amongst the most interesting, and as far as the elements in these tables are correct, one of the most decidedly established facts in the sciences of geography and meteorology.

No. XXXIX.—*Table of the prevalence of western winds at Paris.*

	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826
January	16	16	22	18	11	11	21	7	17	12	4
February	17	24	11	22	7	3	10	19	12	15	14
March	16	17	24	17	12	21	19	20	15	10	9
April	12	10	9	12	13	11	12	14	16	13	21
May	18	17	11	13	17	21	12	15	18	14	13
June	20	19	16	21	19	14	15	19	11	14	8
July	20	27	15	12	20	26	24	25	16	10	17
August	18	19	18	13	20	20	22	20	20	22	13
September	16	8	16	15	15	23	15	16	13	17	17
October	13	6	6	16	16	19	13	15	12	18	17
November	14	18	15	16	9	19	21	9	22	23	17
December	18	14	4	17	13	19	5	23	27	15	19
	198	195	167	192	172	211	189	202	201	183	169

No. 39 was constructed from the Meteorological tables in *Les Annales de Chimie et la Physique*, and show, that at Paris, during 3996 consecutive days, the winds from the western side of the meridian amounted to upwards of one half, and in several years to above four-sevenths of the whole aerial currents. Are not the orchards of France, similar to those of the United States, inclined to the eastward?

No. XL.—*Table of the mean temperature, and comparative number of days of the year, on which the winds W. of the Meridian prevail at London, compiled from the Transactions of the Royal Society.*

Years.	Mean Temperature.	Winds W. of the Merid. prevailed, Days
1800	50.5	136
1801	51.3	151½
1802	50.0	167½
1803	50.5	151½
1804	51.8	126
1805	50.0	138½
1806	52.8	154½
1807	50.7	197½
1808	50.5	160½
1809	50.6	148½
1810	51.5	158½
1811	52.7	139
1812	49.2	163
1813	49.7	163½
1814	48.2	143
1815	51.6	180
1816	49.4	149
1817	50.3	199
1818	53.1	141½
1819	51.9	182
1820	49.9	174
1821	52.0	193
1822	53.8	178
1823	51.4	187
1824	52.8	189½
1825	54.0	180½
1826	50.9	97½
Mean.		161½ nearly.

No. XLI.—*Table of the monthly prevalence of Westerly winds in Northamptonshire, England, from a mean of* 12 *years,* 1816 *to* 1827, *inclusive.*

	1816	1817	1818	1819	1820	1821	1822	1823	1824	1825	1826	1827
January	19	21½	25	18½	17½	18½		7	27½	24½	15½	22½
February	20½	26	15	19½	14			18	10	19	20½	9½
March	15	26	24½	22½	18	23		20½	20½	21½	14½	27½
April	12½	14	9	13	17	21½		15	16	14	26½	12½
May	14½	15	10	13½	22	21½		17½	15	10	3	16½
June	17½	19	19	26½	24		11	21½	6½	21		22½
July	18½	26	20½	15½	15		20	27½	22½	11		20½
August	23	24	18½	12½	27½		27	23½	20½	18½		16½
September	16	12½	17	16½	18		13½	22½	22½	20½	14	11½
October	13½	10	13½	20	19		14	18	18	23½	22	12
November	20	21	13	20	12½		22	21½	25	28½	18½	21½
December	20	20	12	19			11	28	30	22½	18½	25
	210	235	197	217				240½	234	234½		218

The winds included in this table, are those west of the meridian ; the observations were made at Althorp, the seat of Earl Spencer, in Northamptonshire, England, about N. lat. $52\frac{1}{2}°$, and considerably east of the centre of the kingdom, and even thus far removed from the Atlantic coast, the winds from the west prevail 61 days in 100, from a mean of the 8 years in the table, for which the monthly observations are complete. Comparing the elements in table 40 and 41, we find that western winds are much more prevalent in the centre of England than at London, but a mean of both tables gives to the three western winds a prevalence of more than half the year, or the western appear to be to the whole, as $52\frac{1}{2}$ to 100. The excess coming from three, out of eight points.

The reader will remember, from page 334, that discredit has been thrown upon the meteorological observations made by the Royal Society of London; but the objections were made in a particular manner to the thermometrical results arising from improper mode and manner of conducting observations with that instrument. The prevalent winds being determined from instruments absolutely exposed to open air, and less exposed to local influence, may be considered as entitled to full credit, and deserve confidence the more, as coinciding with the great results of similar data on both continents. Comparing however the mean temperature of the London table, No. 40, with Haines's and Brantz's tables, Nos. 51, page 389, and 57, page 395, I am strongly disposed to consider the strictures on the data from which the former was derived, as much too severe.

No. XLII.—*Table of the mean temperature and prevalent winds at several of the United States' Military Posts, extracted from Dr. Lovell's Register.*

PLACES OF OBSERVATION.	THERMOMETER. Aggreg. of mean temp.	Highest deg.	Lowest deg.	Range.	WINDS. N. Days.	N.W. Days.	N. E. Days.	E. Days.	S. E. Days.	S. Days.	S. W. Days.	W. Days.
Fort Brady	41.37	90	—33	123	1.74	4.77	1.05	2.24	7.24	2.60	2.27	8.24
Fort Snelling	45.00	96	—29	125	2.88	7.13	2.33	1.16	4.02	3.52	6.05	3.24
Fort Sullivan	42.44	94	—19	113	3.26	6.89	2.04	2.08	0.79	7.02	3.68	4.77
Fort Howard	44.50	100	—38	138	0.70	0.70	11.52	0.19	0.08	0.39	16.04	0.78
Fort Crawford	45.52	96	—28	124	5.58	7.12	1.04	0.29	4.12	5.70	3.04	1.58
Fort Wolcott	51.02	88	— 1	89	3.04	6.54	3.37	0.66	2.68	2.00	10.06	1.83
Council Bluffs	50.82	108	—21	129	5.89	4.52	2.12	1.83	4.02	7.39	3.06	1.60
Fort Columbus	52.82	104	— 3	107	0.72	9.02	3.49	0.87	4.04	3.91	6.29	2.06
Fort Mifflin	55.28	96	6	90	0.50	6.37	4.54	0.74	6.20	1.24	8.20	2.62
Fort Severn	57.40	92	8	84	3.08	6.00	4.00	2.00	3.33	6.91	2.16	2.33
Washington	56.56	95	10	85	2.62	7.47	4.97	1.05	3.19	2.66	7.63	0.74
Fort Johnston	66.68	92	26	66	8.79	3.29	1.31	1.60	0.64	8.97	1.56	4.24
Fort Moultrie	64.49	92	19	73	1.78	1.15	6.85	3.80	5.59	5.07	4.41	1.73
Cant. Jessup	68.31	97	7	90	2.38	2.99	4.38	3.80	7.05	3.28	4.55	1.97
Baton Rouge	68.07	99	18	81	4.58	3.00	2.50	2.67	5.00	4.84	4.75	3.08
Cant. Clinch	68.77	95	11	84	2.05	4.10	4.13	1.47	7.11	2.05	8.67	0.80
St. Augustine	72.23	94	42	52	1.08	2.91	12.50	1.75	7.50	0.75	2.50	1.41
Cant. Brooke	72.37	92	40	52	0.16	4.00	7.08	3.00	4.58	2.83	6.25	2.50

No. XLIII.—*Table of the weather as observed at several of the United States' Posts, from Dr. Lovell's Register.*

PLACES OF OBSERVATION.	Prevailing winds	WEATHER.				Prevailing.
		Fair.	Cloudy.	Rain.	Snow	
		Days.	Days.	Days.	Days.	
Fort Brady	W.	13.30	3.27	7.83	6.02	Fair.
Fort Snelling	N. W.	16.94	5.50	5.77	2.22	Fair.
Fort Sullivan	S.	17.91	9.39	2.31	0.81	Fair.
Fort Howard	S. W.	15.47	7.98	4.56	2.42	Fair.
Fort Crawford	N. W.	16.80	6.29	3.87	1.33	Fair.
Fort Wolcott	S. W.	15.31	8.16	5.94	1.02	Fair.
Council Bluffs	S.	19.68	6.54	2.95	1.25	Fair.
Fort Columbus	N. W.	20.41	3.56	5.47	0.98	Fair.
Fort Mifflin	S. W.	21.20	5.12	5.20	0.41	Fair.
Fort Severn	S.	19.67	4.50	5.08	1.17	Fair.
Washington	S. W.	17.30	6.05	6.44	0.63	Fair.
Fort Johnston	S.	16.87	7.60	5.85	0.12	Fair.
Fort Moultrie	N. E.	22.89	2.48	5.00	0.02	Fair.
Cant. Jessup	S. E.	18.63	4.49	7.25	0.05	Fair.
Baton Rouge	S. E.	20.16	4.08	6.16	.	Fair.
Canton. Clinch	S. W.	18.69	2.27	9.46	.	Fair.
St. Augustine	N. E.	20.66	3.91	5.83	.	Fair.
Cant. Brooke	N. E.	18.16	3.91	8.33	.	Fair.
Average of the several years 1822	N.	18.90	5.03	5.63	0.85	Fair.
1823	S. W.	16.48	6.16	5.98	1.77	Fair.
1824	S.	17.55	5.03	6.29	1.49	Fair.
1825	S. E.	16.91	5.67	6.49	1.32	Fair.
AVERAGE	S. W.	17.46	5.47	6.10	1.36	Fair.

No. XLIV.—*Table of the prevalent winds in the North American Polar sea, as reported in Capt. Parry's second voyage.*

	N.E.	N.	N. W.	W.	S.W.	S.	S.E.	E.
1821, June	2	1	2	3	12	1	9	0
July	5	6	6	2	4	1	6	1
August	5	0	14	3	13	1	1	1
September	2	0	10	1	7	3	7	0
October	10	2	10	0	2	0	5	2
November	8	5	6	3	2	1	1	2
December	1	5	17	0	1	0	5	1
1822, January	2	3	20	3	0	0	0	3
February	1	3	23	0	1	0	0	0
March	3	4	18	2	3	0	1	0
April	5	3	8	2	5	1	3	2
May	6	2	14	3	4	0	2	0
June	3	2	7	3	5	2	6	2
July	5	3	11	1	1	5	4	1
August	4	2	14	2	4	0	3	2
September	4	1	5	3	10	0	7	0
October	9	2	9	0	0	2	7	2
November	1	2	17	6	2	0	2	0
December	3	2	13	8	4	0	0	1
1823, January	4	7	14	1	1	1	3	0
February	4	4	18	2	0	0	0	0
March	1	6	16	6	2	0	0	0
April		4	17	3	4	1	1	0
May	4	2	9	3	5	3	6	0
June	2	7	13	2	3	2	0	1
July	2	3	7	1	0	0	13	1
August	5	2	9	1	2	3	8	1
September	5	3	7	3	5	1	5	1
	104	86	336	68	112	28	95	24
Propt'ns. of 1000	122	100	394,25	79,75	132	32	112	28

No. XLV.—*Table of the elevation above the ocean, and comparative general and mean temperature of various places in the United States.*

NAMES OF PLACES.	Height above the oceanic level.	Latitude.	Longitude from Washington City.	THERMOMETER. Highest	THERMOMETER. Lowest.	THERMOMETER. Range.	Mean Temperature.
Fort Brady near Falls of St. Mary, Mich. Ter.	595	46°39′	7°48′ W.	90	—33	123	41°37′
Fort Howard, southern extremity Green bay, do.	600	44 40	10 00 W.	100	—38	138	44 50
Fort Crawford, on Mississippi, Prairie du Chien,	580	43 03	13 58 W.	96	—28	124	45 52
Fort Snelling, near junc. St. Peter's & Missis. riv.	780	44 53	16 13 W.	96	—29	125	45 00
Council Bluffs, on Missou. above m'th Platte riv.	800	41 25	18 48 W.	108	—21	129	50 82
New Harmony, Wabash, Indiana, *Dr. G. Troost*,	340	38 11	10 50 W.	96	— 5	101	56 74
St. Louis, on Mississippi, Missouri, calculated,	350	38 46	12 58 W.				55 86
Cincinnati, on Ohio, state of Ohio, *Dr. D. Drake*,	30	39 06	7 25 W.	98	—18	116	53 56
Philadelphia, by James Young, mean of 20 years,	30	39 57	1 47½ E.	98	— 2	100	58 41
Germantown, by Reub. Haines, mean of 9 years,	200	40 03	1 45 E.	96	—10	106	52 3
Fort Mifflin, in the Delaware, 6 miles bel. Phila.		39 52	1 43 E.	96	+ 6	90	55 28
New York Harbour, Fort Columbus,		40 42	2 53 E.	104	— 3	107	52 82
Newport Harbour, Rhode Island, Ft. Wolcott,		41 30	5 37 E.	88	—19	89	51 02
Eastport, Maine, Fort Sullivan,		44 44	9 51 E.	94	— 1	113	42 44
Richmond, Va. mean of 4 yrs. M. J. A. Chevallie		37 04	0 26 W.				56 10
Baltimore, by Lewis Brantz, mean of 8 years,		39 18	0 25 E.	98	— 6	104	53 00

Washington City, Rev. Robert Little,		38°53′	00°00′	95	+10	85	56°56′
Annapolis, Fort Severn,		38 58	0 28 E.	92	+ 8	84	57 40
Smithville, at mouth of Cape Fear river, N. C.		34 00	1 10 W.	92	+26	66	58 88
Charleston Harbour, Fort Moultrie,		32 42	3 01 W.	92	+19	73	60 18
St. Augustine, eastern shore of Florida,		29 50	4 33 W.	94	+42	52	72 23
Brooke Cantonm't, west. sh. Flor. nr. Tampa bay		27 57	5 40 W.	92	+40	52	72 37
Pensacola, Cantonment Clinch		30 24	10 19 W.	95	+11	84	68 77
New Orleans, by calculation		30 00	13 10 W.	94			69 01
Baton Rouge	120	30 26	14 23 W.	99	+18	81	68 07
Jessup Cantonment, near Sabine, Louisiana	150	31 30	16 47 W.	97	+ 7	90	68 31

The data in table 45, where the observer's name is not mentioned, or in the two cases of Baton Rouge and New Orleans taken from calculation, are extracted from Dr. Lovell's Register. The reader will observe discrepancies which could only arise from defects in observation. The differences are in several instances irreconcilable with relative latitude or height, and are, for reasons already given, too high, with perhaps the two examples taken from observations made by Messrs. Brantz and Haines. See introductory remarks to this chapter, and tables 39, 40, 42 and 50, of mean temperature.

The most remarkable phenomenon rendered apparent by table 45, is the much more equal range of the Thermometer on the Atlantic coast, than in the basin of the Mississippi. The comparatively intense winter of the central parts of the continent is now demonstrated by undeniable evidence, and removes an idle, but by no means an innoxious vulgar error, so long supported by Volney and others, that the Ohio valley was in winter milder than on like curves of latitude along the Atlantic coast. It is not my wish to

impose this chapter on the public, as a complete theory of the climate of the United States, but I cannot but flatter myself that it contains much document of great tendency to a rational estimate of the meteorology of North America. The evidence now laid before them will or may prevent emigrants from the Atlantic states, removing to the interior with an expectation of finding meliorated seasons on similar latitudes. They may now see, that both summers and winters are more in excessive extremes as the great central prairies are approached, and they may see also on an immense scale, that clearing of land from timber, produces increased extremes, in place of melioration on aerial temperature.

It is of great importance in the investigation of the climate of the United States, to find some one or more central places for which the mean temperature is deduced with certainty. To effect this object is no easy task. If the tables in this chapter are examined and compared, large and irreconcileable discrepancies will be seen between different observers; and the mean of different years at the same place, present a very unequal local temperature; and it may be also discovered, from the hours of making the observations, that the mean temperature of most places in the United States, for which tables have been formed, is stated too high.

Messrs. Brantz and Haines, from observing very early in the morning, have produced tables with lower mean temperature, and no doubt much more correct than any hitherto published. This preference is given to the labours of those two observers, it may be understood, from the time of their observations, and not from superior skill or care in their operations over others. Due diligence appears to have been used in the various military posts from which the data for Lovell's Register were collected, but it must be evident that 7 A. M. and 2 and 9 P. M., must, particularly in high northern latitudes,

give a mean in summer, and of course for the year, entirely too great. In order therefore, to procure points of reference by which to compare other places, I have assumed the results from Brantz's and Haines's tables, as affording the most safe data, and proceed with their aid, and that of various observations made in that city, to fix the mean temperature of Washington, District of Columbia.

The following tables will enable the reader to compare the observations made at the City of Washington, with those of Mr. Reuben Haines at Germantown, James Young at Philadelphia, and Mr. Brantz at Baltimore. The relative elevation above tide water of Capitol Hill, and Mr. Haines's house in Germantown, it is probable are very nearly similar; difference of lat. 1° 08′.

No. XLVI.—*Table of the distribution of Caloric—winds, weather, &c. for* 1820, *at Washington City. Latitude* 38° 50′ 40″ *north. Longitude,* 0.

	Highest.	Lowest.	Mean of the month.	North Wind.	South.	East.	West.	N. West.	S. West.	N. East.	S. East.	Cloudy.	Clear.	Rain or Snow.	Calm.
Jan.	45	4	29.19	4	0	0	25	19	0	9	1	30	58	5	35
Feb.	72	10	41.88	0	4	0	10	15	8	7	2	21	53	13	41
March	71	20	45.99	0	3	0	3	20	18	10	1	21	50	19	35
April	89	24	56.86	0	7	1	5	9	24	11	2	19	62	9	31
May	85	44	63.15	2	7	0	17	7	12	8	0	39	47	7	40
June	96	50	72.34	0	2	0	2	7	10	10	0	16	69	8	56
July	96	60	78.81	2	4	0	2	9	36	4	2	27	66	11	34
Aug.	92	60	75.71	0	0	0	0	8	42	5	0	24	65	4	38
Sept.	88	43	67.44	0	5	0	0	10	10	5	1	21	63	6	59
Oct.	78	28	51.61	1	11	0	4	20	2	8	1	21	63	9	46
Nov.	64	26	42.32	0	0	0	15	12	9	5	0	27	55	8	49
Dec.	45	4	29.19	4	0	0	25	19	9	9	1	30	58	5	31

Notes to table 46.

WINDS.—North 13. South 43. East 1. West 108. N. West 155. S. West 177. N. East 91. S. East 11.—Nearly *three-fourths* from the *western* semicircle of the horizon.

WEATHER.—Clear 596. Cloudy 297. Calm 495. Rain or Snow 104.

RANGE.—100 degrees *Fahrenheit*, equal 37.77 of the *Centigrade* thermometer.

MEAN TEMPERATURE, for 1820, 55.02 Fahrenheit, equal 12.77 of Centrigade.

TEMPERATURE of *water* on the 30th Dec. 1820:—

	Fah.	*Cent.*
Public fountain in F. street, near the Catholic Church,	54	12.22
Hydrant, near Davis & Force's, Pennsylvania avenue,	52	11.11
Do. near Mr. Appler's, do.	49	9.44
Do. near Strother's Hotel, do.	50	10.00

COMPARISONS.

At Buyukdere, on the European side of the Bosphorus, near the Black Sea, about twelve miles from Constantinople. Thermometer in shade at noon.

	Highest.	*Lowest.*	*Mean.*	*Range.*
July 1799,	95	79	87.00	16.00
August,	87	70	78.50	17.00
At Jaffa, *Jappa* of the Scripture.				
July 1800,	94	84	89.00	10.00
At Grand Cairo.				
July 1801,	106	95	100.50	11.00
Dec. 1801,	83	64	73.50	19.00

J. MEIGS.

General Land Office, Jan. 22, 1821.

No. XLVII.—*Table of the monthly and annual mean temperature, at Washington City, from observations made in the Columbian Institute, by the Rev. Robert Little.*

Months.	1821*	1822	1823	1824	1825	1826	1827	Annual Mean.
Jan.	27.3			44.4	35.00	36.00	30.00	33.0
Feb.	44.13	36.41		40.8			42.00	40.80
March	42.31			50.4	48.05	49.00	48.00	46.9
April	51.33	57.46	70.20	59.0†	56.00	53.00	60.00	55.56
May	66.06		77.0		65.00	73.05	64.90	67.0
June	75.51		79.9			77.00	73.51	73.3
July	74.60		83.1	79.00	79.00	74.00	81.00	77.5
Aug.	79.40		82.9			77.00	80.50	78.8
Sept.	72.14		73.4	69.00	69.00	72.00	85.00	72.3
Oct.	57.11		60.6	57.00	57.00	59.00		58.3
Nov.	42.21		45.3	43.50	43.50	47.50		44.3
Dec.	32.62		43.2	40.00	40.00	37.00		36.4
Mean								57.09

* Column headed 1821, from Mr. J. Meigs. See table 46.

† From April 1823 to April 1824 inclusive, on the authority of M. de Wallenstein, Trans. A. P. S. New Series, vol. ii. page 436. The years 1823 and 1824, being far above the common temperature, and yielding, according to M. de Wallenstein, an annual mean of 62.2, the months are omitted in making up the aggregate in the right hand column of table 47. In 1823, according to the Rev. Mr. Little, the mean of May was 66°; according to M. de Wallenstein 77°. September, by the former 68°, by the latter 73°.04. In 1824, January according to Mr. Little 38°, to M. de Wallenstein 44°.4. The mean from April 1823 to March 1824 inclusive, was estimated by Brantz at Baltimore 53°.98; by Haines at Germantown 52°.28; and by James Young in Philadelphia 58°.54. It is probable that M. de Wallenstein's thermometer was influenced by some local cause, which increased the temperature. The mean in Lovell's Register, for Fort Moultrie in Charleston harbor, 6° 11′ S. from Washing-

Compared with either Haines or Brantz, the mean in table 47 is too high. If we allow a minute of latitude as equal to the 60th part of a degree of temperature, and on that datum deduce the mean of Washington from that of Baltimore in table 50, we have $53^\circ+24'$ or $53^\circ.4$ as the mean of the latter. It is 70 minutes of latitude between Washington and Germantown, which on the preceding rule would give to the former, from Haines's mean of latitude, $53^\circ.466$. It is remarkable also, that if on the difference of latitude and temperature, applied to the mean of Charleston, South Carolina, that of Washington comes out $54^\circ.09$. Mr. J. Meigs in 1821, found a mean for that single year, of $55^\circ.02$; Mr. Brantz deduced $52\frac{1}{2}^\circ$, and Mr. Haines $49^\circ.6$ for the same period. If Mr. Meigs' mean was corrected from the Baltimore table, it would be reduced to $52^\circ.9$, and if from the Germantown table, to a fraction less than 51°. It is rendered probable from the preceding reasoning, that the real mean temperature of Washington City is so near $53\frac{1}{2}^\circ$, as to admit the adoption of that number.

If therefore we allow one degree of Fahrenheit, as an equivalent for a degree of latitude, and the converse, and again estimate 400 feet elevation, as sufficient to lower the thermometer one degree, and suppose the mean of Washington found at $53\frac{1}{2}^\circ$, we have the necessary principles to deduce the mean temperature of any other place, within perhaps 5 or 6 degrees of latitude, either north or south, by having the latitude and relative height given. So many localities, however, contribute to slightly in-

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ton, is from April 1823, to March 1824 inclusive, only 65° $92'$ or $3\frac{3}{4}^\circ$ more than deduced by M. de Wallenstein for the same period, at the latter place; and it is shewn, I trust conclusively, in this chapter, that the temperature shown in Dr. Lovell's Register, is at least sufficiently elevated.

fluence the thermometer, that only general results can be expected from such comparative estimates, and when the difference of latitude becomes considerable, such rules would be altogether delusive.

I may here again repeat the observation, that in all the tables of aerial temperature in this chapter, the discrepancies are greater than can arise from the relative height of places, or their differences in arc, and shew the great difficulty of procuring satisfactory results on meteorology, and enhance the necessity of paying more attention than has been hitherto done to prevailing winds, freezing of rivers and vegetable indications of temperature.

No. XLVIII.—*Table of the prevailing monthly winds at Washington City, constructed from the Rev. Mr. Little's monthly tables, and reduced to proportions of* 1000.

Months.	N. E.	N.	N. W.	W.	S. W.	S.	S. E.	E.
January	149	65	410	100	190	30	47	10
February	181	137	151	142	166	181	35	20
March	138	90	300	104	117	120	87	30
April	165	75	270	115	190	130	40	10
May	177	30	188	70	260	50	25	30
June	164	40	147	40	393	70	75	00
July	159	50	247	00	283	108	85	20
August	221	53	221	17	327	26	180	10
September	241	71	125	22	220	129	140	31
October	126	87	338	40	300	55	130	7
November	150	25	305	140	235	115	123	0
December	140	53	369	67	154	127	102	0
Amount	2011	776	3071	857	2835	1141	1069	168

The elements in table 48, afford very important data. The whole amount of winds are 11,928, of which 6763 are from the three great points west of the Meridian, whilst those in an opposite direction or from S. E., E. and N. E. only amount to 3248.

No. XLIX.—*Annual summary of Meteorological Observations at Baltimore, for the year* 1823.

	Farenheit's Thermometer.			Barometer.				rain or snow	Prevailing winds.					mean temperature City Springs.		
	highest at 3 P. M.	lowest sun rise.	aggregate mean.	highest	lowest	monthly range	monthly mean.	inches	N. W.	N. E.	S. E.	S. W.	Calm.	Centre	Clopper's	Sterrett's
January,	52°	15°	35 1-3	30 49	29 48	1 01	30 03	5 60	15	4	8	1	3	54	54	52
February,	49	9	29 1-4	30 46	29 32	1 14	30 03	0 70	12	7	7	1	4	53	53	49
March,	62	18	41 1-2	30 57	28 84	1 73	30 01	7 10	9	7	8	7		52 1-2	52 5-8	49 1-2
April,	77	34	45 2-3	30 61	29 68	0 93	30 16	1 80	7	5	8	10		52 1-4	52 1-4	51 1-8
May,	87	42	63 1-3	30 30	29 55	0 75	29 98	2 10	13	4	10	4		53 1-2	53 1-2	54 3-8
June,	87	52	69 1-3	30 38	29 78	0 60	30 11	1 60	2	8	17	3		54 7-8	55 1-4	58
July,	92	56	76	30 35	29 80	0 55	30 06	3 60	4	7	11	8	1	57	57	61
August,	90	59	75 1-2	30 47	29 85	0 62	30 10	4 10	4	6	11	10		58 1-4	58 1-4	63 1-4
September,	88	39	66 1-2	30 43	29 77	0 66	30 11	5 80	18	13	4	5		59	59	63 1-4
October,	74	32	53 2-3	30 34	29 70	0 64	30 08	2 80	14	4	7	6		59	59	61
November,	58	25	40 2-3	30 68	29 81	0 87	30 12	3 10	9	10	4	6	1	57 1-4	57 1-4	56
December,	54	22	36 2-4	30 62	29 52	1 01	30 18	6 25	12	4	6	7	2	55 1-2	55 1-2	56
ANNUAL.			53 2-3			1 84	30 08	44 55	109	79	101	68	8	55 1-2	55 1-2	56°

No. L.—*Table of the monthly mean temperature, near Baltimore, N. lat.* 39° 17′, *long.* 0° 28′ *E., deduced from eight years observations by Mr. Lewis Brantz.*

Month.	1817	1818	1819	1820	1821	1822	1823	1824	Mean.
January	28.75	31	36.25	26	24.12	27	35.33	39	30.875
February	27.25	28	33.5	40	37.33	33.5	29.25	34.66	33
March	40.5	29.66	36.66	41.66	38.33	44.5	41.5	41	39.25
April	58.25	46.5	50.5	52.66	45.33	55.5	55.66	51.75	52.12
May	59	57	62.25	56.12	59.75	66.66	63.33	60.66	60.6
June	69	71	72.66	69.2	73.75	72.5	69.33	69.5	70.875
July	74.75	76.33	75	74.6	72.5	76.66	76	76	75.25
August	71.75	73	76	74.25	78	76.5	75.5	72	74.66
September	65	63	68	66.66	69	70	66.5	64.75	66.6
October	52.25	51.66	51.75	50	54	59.33	53.66	56.5	54.875
November	46.66	45	46.66	39	43.25	49.25	40.66	44.5	44.33
December	34	29	33.66	32.5	34	35.33	36.66	40.33	38.75
Mean.	52.25	50.09	53.6	51.88	52.44	55.56	53.61	54.13	52.94

The annual mean temperature deduced from the monthly mean in table 49, is so inconsiderable a fraction less than 53°, that I have assumed that whole number as the mean annual temperature of Baltimore.

No. LI.—*Table of the monthly excess of heat and cold at Baltimore, compiled from observations made by Lewis Brantz.* H. *highest*, L. *lowest.*

Month	1817		1818		1819		1820		1821		1822		1823		1824	
	H.	L.	H	L.	H	L.	H	L.	H.	L.	H.	L.	H.	L.	H.	L.
January	60	5	52	9	60	17	54	−2	55	−6	44	−1	52	15	62	25
February	56	−4	59	−2	60	13	7[illegible]	[illegible]0	63	18	66	14	49	9	58	9
March	64	18	68	16	71	14	76	13	64	15	73	24	62	18	60	26
April	84	36	70	25	74	26	88	18	68	22	82	30	77	34	78	32
May	83	43	84	37	85	35	84	42	90	42	88	51	87	42	80	43
June	84	41	90	54	94	54	94	47	89	55	90	56	87	52	89	50
July	92	54	94	60	96	55	95	58	92	57	93	61	92	56	88	63
August	88	48	88	63	98	53	98	58	95	59	92	62	90	59	84	58
Septem.	86	44	85	42	95	42	90	40	93	47	88	52	88	39	82	46
October	70	30	74	30	78	25	79	26	79	32	80	34	74	32	73	32
Novem.	74	20	73	25	70	22	64	19	62	28	65	30	58	25	63	28
Decem.	62	6	56	5	54	10	50	14	52	10	61	11	54	22	60	25

From this table it appears that in a connected series of 8 years the thermometer rose to 98 twice, August 14th, 1819, and August 12th, 1820; and sunk four times below zero, February 15th, 1817, February 10th, 1818, January 1st, 1820, and January 25th, 1821. In 1817, from March 31st to October 28th, 213 days temperature above 36°; 1818, from April 23d to October 22d, 182 days temperature above 37°; 1819, from April 2d to October 26th, 207 days temperature above 40°; 1820, from April 11th to October 22d, 195 days temperature above 33°; 1821, from April 20th to October 20th, 183 days temperature above 32°; 1822, from April 3d to November 4th, 212 days temperature above 39°; 1823, from March 22d to October 18th, 210 days temperature above 36°; and 1824, from March 23d to October 22d, 219 days temperature above 32°. The summer, therefore, of Baltimore and vicinity, averaged from 1817 to 1824 inclusive, 202½ days. See table for Harmony.

No. LII.—*Table of the monthly winds at Baltimore, from a mean of 8 years, constructed from Mr. Brantz's tables.*

Months.	NE.	NW.	SW.	SE.
January	38	91	38	62
February	49	77	53	55
March	46	86	46	61
April	36	71	61	63
May	37	70	37	98
June	32	56	69	83
July	52	49	62	87
August	48	56	48	99
September	58	62	33	73
October	57	88	49	62
November	44	71	48	60
December	62	83	52	42
Amount	559	870	596	845
Decimally expressed	194	303	208	295

The proportions of the winds in this table differ so essentially from every other in this chapter, and the other tables being founded on observations so widely and so unconnectedly made, would certainly justify a suspicion of some local influence on Mr. Brantz's Anemometer. However, in this case the winds from the western side of the meridian preponderate.

No. LIII.—*Table of the monthly depth in inches of rain at Baltimore, from Mr. Brantz's tables.*

	1817	1818	1819	1820	1821	1822	1823	1824	Mean.
January	2.25	.9	.7	2.8	3.3	1.8	5.6	2.3	2.85
February	2.8	2.0	1.9	2.2	5.4	4.8	.7	5.9	3.225
March	4.5	3.0	4.55	3.3	1.7	1.3	7.1	4.3	3.71
April	1.5	2.1	2.7	1.1	2.1	2.1	1.8	4.7	2.20
May	2.6	6.45	4.1	4.4	5.1	1.5	2.1	2.95	3.65
June	9.1	1.15	1.3	4.6	1.8	1.5	1.6	5.03	3.66
July	3.5	4.1	2.2	2.2	7.5	4.35	3.6	3.37	3.85
August	10.4	2.0	4.3	8.0	0.3	.8	4.1	4.5	4.3
September	3.3	3.2	3.0	1.5	10.7	2.25	5.8	2.94	4.45
October	1.8	3.1	.7	7.8	3.4	2.5	2.8	1.77	2.975
November	3.7	2.0	1.1	2.7	5.6	5.1	3.1	2.27	3.2
December	3.6	2.6	2.2	1.9	3.3	1.2	6.25	2.25	2.9
Amount.	48.55	32.6	28.75	40.5	50.2	29.2	44.55	42.28	39.97

No. LIV.—*Monthly Mean temperature at Philadelphia, deduced from a connected series of 20 years observations, made by Mr. James Young at the Philad. Insurance Office, corner of 2nd and Dock streets.*

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
1807	32	33.25	39	52.50	62.25	70	75	75.50	68.75	60.25	42.50	43	51.25
1808	33.25	41	48.75	60.75	67	81	81	80.75	72.25	59.50	47.75	39.25	59.33
1809	29.75	32.75	42.75	57.25	67.50	78.50	78.25	76.75	71.75	66.25	43.25	40.50	57.⅛
1810	34	39	42.75	61	72	78	79.25	78	73.75	58.75	45	36.50	58.⅛
1811	34.50	33.75	53.75	56.75	66	76.25	84.75	79.75	74	65.25	49	37	59.2
1812	31	36.75	45	58.25	64	79	83	79.50	70	59.25	46.25	37.25	57.4
1813	31.50	35.25	45	60	67.25	83.50	81.25	82.75	76	57.25	47.50	35	58.50
1814	32.75	38.75	43	59.75	70.75	77.50	82	79.75	73.50	60.25	48.75	35	58.50
1815	34.75	32.25	47.75	57.50	65.50	78.25	86.50	81.50	71.75	60.50	50.25	35.25	58.50
1816	30.75	40	44.75	57.25	67	75	76.75	79.50	70	60.50	49.50	39.50	51.75
1817	31	27.25	45	61	68.25	74	80.75	79.50	72.75	57.50	50.25	37	57
1818	33	30.25	45.50	53.75	65.50	80.75	82.75	79.25	70.75	59.75	51.50	32.75	58 56½
1819	36	39.25	40.33	59.1	66.2	81.9	84.4	83.50	75.⅞	58	50.7	35.6	59.2
1820	30	43.8	46.50	46.8	66.2	80.6	86.4	83.4	76	58.1	44.1	34.50	58
1821	25	40	45.50	54.8	69.50	81.50	82.1	84.9	75.50	61.33	45.6	34.33	58.33
1822	30	38.50	48.50	56.7	74.	80.	84.4	82.6	82.6	64.1	53.1	36.1	60.8
1823	34.8	29.6	44.7	61.1	69.1	78.1	81.5	81.9	71.50	58.6	43	38.4	58.9
1824	39.8	34.6	44.9	54.7	64.4	78.4	83.6	79.5	71.9	61.6	47.7	40.9	58.50
1825	36.7	38.3	51.1	60.4	71.4	82.9	85.4	82.2	73.7	66	48.50	36.8	61.1
1826	34.4	39.4	48.1	54.25	78.50	82.	85.2	82.75	75.6	63.50	48.6	37.50	60.8
Mean.	32.7	36.32	45.62	57.18	68.1	78.27	82.25	80.6	73.39	60.81	47.64	37.1	58.41

No. LV.—*Table of the annual winds at Philadelphia, for 21 years, formed from observations made by Mr. James Young, at the Philadelphia Insurance Office, corner of Second and Dock streets.*

	N. E.	N.	N. W.	W.	S. W.	S.	S. E.	E.
1806	234	41	191	174	210	77	75	42
1807	157	55	287	98	252	70	60	24
1808	197	35	225	71	260	80	81	32
1809	220	55	198	103	256	47	50	23
1810	204	51	241	76	238	48	85	39
1811	253	36	241	78	253	48	58	21
1812	198	38	278	132	215	35	65	35
1813	173	48	261	111	255	46	63	17
1814	150	52	239	122	265	47	76	29
1815	175	48	269	120	237	45	61	29
1816	166	67	277	98	263	49	51	25
1817	181	66	252	117	229	64	51	31
1818	173	59	209	149	251	34	47	39
1819	193	62	173	161	268	68	59	26
1820	197	53	192	110	292	60	54	36
1821	174	67	209	137	225	80	73	48
1822	192	50	177	119	301	79	102	30
1823	201	35	204	143	300	56	77	32
1824	193	37	245	135	279	64	75	43
1825	258	42	203	121	256	62	100	34
1826	223	44	193	158	251	65	92	51
Annual mean.	196	49	227	120	255	58	69	$32\frac{3}{5}$

The annual mean in No. 55, as well as in No. 58, are reduced to proportions of 1000; and it is remarkable, that in the Philadelphia table, the three western winds constitute 602 thousandths, in the Germantown table 663 thousandths, and in the table of the Arctic winds No. 44, page 378, the western again amount to 602 thousandths of the whole.

No. LVI.—*Table of the monthly mean temperature at Germantown, near Philadelphia, N. lat.* 40° 03′, *long. W. C.* 1° 45′ *E.* From Observations by Mr. Reuben Haines.

	YEARS.										Monthly Mean.
	1819	1820	1821	1822	1823	1824	1825	1826	1827	1828	
January		26.5	27	25.6	27.5	36.875	32.33	32	26.6	36.4	30
February		32	33.75	27.2	26	33.75	34	35.4	37.6	38.7	33.1
March		39.66	37.45	42.33	35.33	39.9	45.3	44.3	42.6	44.5	41.2
April		53	44	52.25	54.7	49.6	51.5	47.2	55.1	47.3	49.4
May		57.75	60	62	60.4	61.8	61.6	68.8	58.7	61	61.3
June	62.7	68.75	67.57	71	69.5	69.33	73.5	72.5	84.9	72.2	71.2
July	76	75.5	71	75.1	73	75.5	81.2	74	74.1	73.8	75
August	75.4	72	71	73.5	72	69.6	73.4	79	73		73
September	68.875	66.33	63.8	64.4	63.33	64.4	63.9	67.7	64		65
October	52.66	50	51.5	56.1	49.7	53.7	57.33	55.33	55		53.4
November	46.1	37.2	39.7	46.33	39.5	43.2	43	43.33	39.5		42.6
December	33.66	28	28.4	33	34.8	30.9	33.4	33.8	38		32.6
Mean		50.55	49.6	52.4	50.5	52.1	54.2	54.4	54		52.37

No. LVII.—*Table of the monthly extremes of Temp. at Germantown near Philadelphia, N. lat. 40° 03′. Compiled from observations made by Reuben Haines.*

	1819		1820		1821		1822		1823		1824		1825		1826	
Month.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
January			40	5	52	–10	47½	–¾	53	9	60	12	49	14	59	4
February			60	–4	59	19	64	11	45	3	64	5	52	5	61	2
March			68	16	70	12	68	21	59	7	58	19	69	27	78	22
April			72	30	72	23	79	30	79	32	76	31	78	27	80	21
May			74	42	83	42	80	48	85	33	82	38	85	39	90	44
June	89	55	87	50	86	55	80	62	91	45	90	46	92	51	92	57
July	92	54	88	60	87	60	86	62	87	57	89	59	96	65	90	55
August	96	62	85	60	92	61	87	56	88	53	86	50	94	59	85	59
September	86	50	82	46	85	36	89	47	84	33	82	41	78	44	86	44
October	74	28	70	29	70	34	76	35	74	32	73	30	83	31	74	32
November	68	28	55	22	55	28	68	31	56	18	58	20	70	23	62	25
December	48	10	47	16	46	10	55	10	50	19	64	21	57	3	61	2

The result of mean temperature at Germantown by Mr. Haines, corresponds in a very striking manner with that deduced from Mr. Brantz's tables for Baltimore. The difference of latitude between the two points of observation is 47′, and the difference of annual mean temperature 67 hundredths of a degree of Fahrenheit. The relative latitude at an allowance of a degree of latitude to a degree of the thermometers used, would yield a difference of 78 hundredths in mean temperature.

No. LVIII.—*Table of the prevalent winds at Germantown, near Philadelphia, from eight years' observations made by Reuben Haines.*

Year.	N.E.	N.	N.W.	W.	S.W.	S.	S.E.	E.
1820	148	21	182	261	217	37	80	49
1821	57	48	174	268	166	53	115	65
1822	116	43	475	98	205	16	37	7
1823	107	97	165	407	175	71	80	125
1824	75	80	109	323	135	93	48	116
1825	105	35	140	410	145	51	61	78
1826	91	32	158	361	163	32	72	93
1827	95	40	185	333	163	49	30	105
Amount	794	396	1588	2461	1369	402	523	638
Pro. of 1000	97.1	48.4	194.3	301	167.5	49.2	64	78.5

In this, as in most other tables of wind in this chapter, the north and south winds nearly balance each other, whilst those from the three western, exceed those from the three eastern points as 3 to 1 nearly.

No. LIX.—*Meteorological Register, for July,* 1828, *kept on the Capitol Hill, Washington, D. C., by W. E.*

Day	Thermometer.	Winds	Weather	Rain 100th inches
1	82	SW.	Cloudy: ev. gust.	
2	69	NW.	Clear: lt. breeze	
3	70	NW.	Cloudy: mod. br.	
4	68	NW.	Clear: m. b.	
5	69	NE.	Clear: m. b.	
6	72½	SW.	Clear: light b.	
7	80½	SW.	Clear: l. b.	
8	71½	SSE.SW.	Cloudy: brisk b. rain	.08
9	68½	NW.	Clear: l. b.	
10	73½	NW.	do. do.	
11	75	SW.NW.	do. do.	
12	73	SW.SE.	do. do.	
13	80½	SE.SW.	Cl'dy: wind and rain	.41
14	76	SW.	Cloudy: m. b. rain	.95
15	70	NW.SW.	Cloudy: br. b. rain	.10
16	72½	NW.	Clear: mod. b.	
17	70½	SW.NW.	do. do.	
18	72½	SW.	do. do.	
19	74½	SW.	Misty: l. b.	
20	79	SW.SE.	Cloudy: l. b. rain	.12
21	78	SW.	Clear: m. b.	
22	81½	SE.	Cloudy: m. b. rain	.05
23	81½	SW.	Clear: br. b.	
24	82½	SW.	do. do.	
25	82	SW.W.	Cl'r: l. b. ev. cl'y: r'n	.10
26	82½	NW.	Cloudy: m. b. rain	.05
27	84	SW.	Clear: m. b.	
28	80	NW.SE.	do. do.	
29	75	NE.NW.	Cloudy: br. b.	
30	75½	NW.SW.	Clear: m. b.	
31	79	S.W.	Cloudy: m. b. rain	.05
				1.91

Notes to No. 59.

Maximum temperature on the 27th, 94; minimum on the 5th, 58; difference of extremes, 36; mean of do. 76.

No. LX.—*Table of the diurnal and mean heat, and prevalent winds at Germantown, for July,* 1828, *by Reuben Haines.*

Day	Thermometer.	Prevailing winds.	Rain. Inches.
1	72½	S.	
2	70	W.	
3	68	SW.W.	
4	71	NW.	
5	68½	NW.	
6	71	W.	
7	76	SW.	
8	73	S.	1.80
9	70	SW.	
10	69½	W.SW.	.5
11	72½	SW.	
12	70	W.	
13	66½	SE.S.	
14	75½	SE.SW.	.28
15	73½	W.SW.	.90
16	74	SE.SE.	
17	72	W.	18
18	72	NW.W.	.20
19	74	W.SW.	
20	70	W.N.	
21	74	NW.W.	.45
22	76½	SW.W.	
23	78	W.	
24	79	W.SW.	.10
25	80½	SW.	
26	89½	SW.	.10
27	81½	W.	
28	81½	W.SW.	
29	72½	N.W.	
30	75½	N.W.	
31	74½	S.SW.	4.56

THERMOMETER.

Max. on 26th, 91; Min. 4th & 5th, 60; Mean of mth 74.

Table 57, p. 385, exhibits a range of 106, the thermometer having risen to 96, on August 1st 1819, and sunk to 10° below zero, on January 25th 1821. In fact, from the 11th to the 27th of January 1821, Mr. Haines's thermometer floated between 37 above, to 10 below zero. At the same period, Mr. Brantz's instrument at Baltimore, veered between 6° below and 40° above zero. The observations of Mr. J. Young in the city of Philadelphia, indicate simultaneous extremes of temperature, but the latter as usual several degrees above his co-observers.

It is shewn by Mr. Haines's data, that in 1820, from the 20th of April to October 24, 187 days, the temperature was above 38°.

In 1821, from April 20th to November 12th, 206 days, the temperature was above 34°.

In 1822, from April 3rd to November 4th, 214 days, the temperature was above 36°.

In 1823, from March 30th to November 1st, 215 days, the lowest temperature was 32°.

In 1824, from April 5th to October 29th, 207 days, the temperature stood above 33°.

The following comparative view of the summers at Baltimore and Germantown, is the more worthy of interest, from the fact so clearly shewn by the tables in this chapter, that of all the observers who have collected thermometrical data concerning the United States, Messrs. Brantz and Haines have deduced the lowest comparative mean temperature.

No. LXI.—*Temperature of Summer at Baltimore.*

By Mr. Lewis Brantz.

1820.	April 11 to Oct. 22nd, 195 days.
1821.	April 20 to Nov. 20th, 214 days.
1822.	April 3rd to Nov. 30, 241 days.
1823.	March 22 to Nov. 18, 241 days.
1824.	March 23 to Oct. 22, 219 days.

Summer at Germantown by Reuben Haines.

1820. April 20th to Oct. 24, 187 days.
1821. April 20th to Nov. 12, 206 days.
1822. April 3 to Nov. 4, 214 days.*
1823. March 30 to Nov. 1st, 215 days.
1824. April 5th to Oct. 29, 207 days.

In respect to influence on vegetation, cold rains and chilling winds, though unattended by real cold so low as the freezing of water, nevertheless retrench from real summer; but with every deduction the true vegetable summer, or the season in which mean heat exceeds 60° of Fahrenheit, over the Atlantic portion of the middle states, exceeds 150 days in a mean of an extensive series of years; though in some years untimely frosts occur in almost every month, of which 1816 was a very remarkable instance.

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* On the 5th of November Mr. Haines's thermometer fell to 31°, but rose again and ranged between 32° and 50°, generally about 40°, until the 2nd of December, and it may be observed that the summer of two places so contiguous as those in this table, may have an apparent great difference of summer from a single frost. From both these tables it is shewn, that the Atlantic slope of the United States, where but slightly elevated above the Oceanic level, has in common years, a summer of from 180 to 240 days, or from 6 to 8 months.

No. LXII.—*Table of the monthly depth, in inches, of rain at Germantown, by Reuben Haines.*

	1819	1820	1821	1822	1823	1824	1825	1826	1827	Monthly mean.
January			.48	1.70	3.38	3.67	1.84	1.48	2.72	2.18
February		2.55	4.82	2.90	3.86	3.94	4.54	2.50	3.57	3.58
March		5.01	.57	2.20	6.87	2.63	5.40	3.54	1.42	3.07
April			3.05	2.16	1.77	4.54	.75	3.02	3.06	2.62
May		6.36	5.92	2.17	1.60	1.59	2.57	.22	2.58	2.87
June		1.88	2.60	1.44	.87	6.09	3.94	5.98	2.98	3.22
July	.74	6.50	1.84	3.89	6.12	8.80	1.68	5.87	2.90	4.25
August	3.86	3.64	.41	1.33	4.68	6.39	4.06	4.30	6.56	3.48
September	2.44	1.95	5.74	5.45	3.46	6.60	2.23	2.82	1.18	3.27
October	.94	8.94	3.24	1.24	2.02	1.53	1.70	5.38	6.57	3.50
November	1.00	3.12	4.65	5.00	2.47	2.49	1.05	2.05	5.30	3.01
December	1.46	3.25	2.84	1.25	7.37	2.11	3.60	1.47	4.09	3.05
Amount.	10.44	43.20	36.06	30.73	44.47	50.38	33.36	38.63	4293	38.10

No. LXIII.—*Table of the comparative monthly mean temperature of New Harmony and Philadelphia, for 1826, the former standing* 1° 47′ *more southwardly, and also elevated above the latter about* 340 *feet.*

New Harmony Gazette, No. 19, vol. 2, p. 152.

	New Harmony.			Philadelphia.		
	Minimum	Maximum	Mean	Minimum	Maximum	Mean
January	4°	75°	35.1	7	60	37
February	0	68	37.1	4	66	38
March	30	82	57	22	74	44
April	25	85	57.9	27	75	52
May	51	93	73.6	48	91	75
June	56	98	76.5	54	94	74
July	55	93	76.3	56	90	76
August	41	92	74	60	86	75
September	37	83	65	44	88	68
October	31	82	62.6	30	78	58
November	20	77	44	30	64	45
December	—4	66	35	4	60	36
			57.84			56.5

Difference 1.34

No. LXIV.—*Table of the monthly mean temperature at New Harmony, Indiana, N. lat.* 38° 11′, *W. long.* 10° 50′, *extracted from the New Harmony Gazette. Observer, Gerard Troost.*

Month.	Maximum.	Minimum.	Range.	Mean.	Hottest day.	Coldest day.
1826, July	93	38	38	76.3	21	28
Aug.	92.7	41	51.7	74	14	28
Sept.	83	37	46	65	9	27
Oct.	82	31	51	62.6	31	10
Nov.	77	20	57	44.1	6	19
Dec.	66	—4	70	35.5	17	27
1827, Jan.	59	—5	54	27	25	12
Feb.	75	16	59	45.5	23	12
March	75	25	50	49.1	29	15
April	82	30	50	55	25	17
May	86	31	55	61.2	28	7
June	96	41	55	74.1	19	22
July	93	69	24	81.4	12	19
Aug.	96	55	41	77	5	22
Sept.	87	32	55	66.3	4	27
Oct.	75	20	55	48.83	3	27
Nov.	72	18	54	42.54	3	21
Dec.	66	21	45	39.71	3	12
1828, Jan.	64	12	52	40.23	5	21
Feb.	68	12	56	41.98	2	28
March	82	20	62	51.59	26	4
April	86	28	58	55.23	30	5
May	91	42	49	68.12	4	8
June	96	55	41	78.48	24	13
Mean of the year				56.69		

No. LXV.—*Table of the monthly winds at New Harmony from a mean of two years, commencing July,* 1826, *ending June,* 1828, *both months inclusive.*

Months.	N.E.	N.	N.W	W.	S.W	S.	S.E.	E.
January	33	22	22	37	33	17	11	22
February	9	13	16	40	37	30	15	11
March	14	15	24	33	54	17	14	10
April	8	13	32	36	43	33	4	14
May	16	7	26	26	44	31	12	13
June	4	4	6	20	35	27	8	8
July	9	32	19	17	41	28	11	2
August	46	34	11	12	34	25	14	15
September	27	35	14	13	32	19	18	22
October	20	38	20	34	23	22	11	14
November	13	30	30	32	18	33	4	22
December	12	18	28	29	46	32	9	13
	201	261	248	329	440	314	131	66
Propor. of 1000	101	131	124	165	221	155	65	33

The winds at New Harmony were observed by Dr. Gerard Troost, at morning, noon, and evening. The period, though rather too limited for a conclusive result, yet gives to each wind a relative mean, which corresponds with an astonishing approximation to the tables for other and very distant parts of the continent.

No. LXVI.—*Table of the monthly depth, in inches, of rain, at New Harmony, by Dr. Troost.*

Months.	1826.	1827.	1828.	Mean.
January		3.17	5.45	4.31
February		4.05	4.04	4.04
March		3.42	3.34	3.38
April		6.37	2.67	4.52
May		1.65	3.58	2.61
June		3.30	5.53	4.41
July	3.75	3.34		3.54
August	1.95	7.74		4.84
September	4.25	1.34		2.80
October	1.85	3.84		2.84
November	1.82	1.42		1.62
December	2.84	5.04		3.94
Amount	16.46	44.68	24.61	42.85

This, and No. 53, p. 391, and 62, p. 401, tables of rain, are inserted more as subjects of curious comparison, than from any philosophical result that can be drawn from such desultory observation, or from phenomena which occur so very irregularly as do the rains of the United States. The mean terms of the same month at the same place, differ from each other not more widely than do the mean terms of successive years. To determine whether there exists a regular periodical series of wet and dry seasons, demands a much more extended period of observation, and of observations made simultaneously at numerous, and as far as practicable, distant places.

No. LXVII.—*Table of the monthly excess of heat and cold, or the highest and lowest extremes of the thermometer, at New Harmony, Indiana, N. lat.* 38° 11′, *long.* 10° 50′ *W., and elevated above the oceanic level about* 340 *feet. Observer, Gerard Troost.*

	1826.		1827.		1828.		New Harmony Gazette.	
Month.	Max.	Min.	Max.	Min.	Max.	Min.	Vol.	Page.
July	93	55					1,	368
August	92.7	41					1,	408
September	83	37					2,	16
October	82	31					2,	48
November	77	20					2,	80
December	66	–4					2,	111
January			54	–5			2,	152
February			75	16			2,	184
March			75	25			2,	224
April			82	32			2,	256
May			86	31			2,	288
June			96	41			2,	320
July			93	69			2,	352
August			96	55			2,	384
September			87	32			2,	416
October			75	20			3,	40
November			72	18			3,	64
December			66	21			3,	104
January					64	12	3,	136
February					68	12	3,	160
March					82	20	3,	192
April					86	28	3,	224
May					91	42	3,	256
June					96	55	3,	296

In 1827, from March 29th to October 29th, 215 days, the thermometer ranged above 32 degrees, giving to New Harmony, in that year, a length of summer nearly similar to the mean of that of Baltimore; one year is, however, too short a period on which to base a general conclusion.

No. LXVIII.—*Table of the monthly mean temperature at Cincinnati, N. lat. 39° 07′, long. 7° 26′ W. Constructed from meteorological tables in Drake's View of Cincinnati, pages* 94, 95.

Month.	THERMOMETER.							
	Highest		Lowest.		Range.		Mean.	
Jan.	59		—2*		61		29.88	
Feb.	66		6		60		34.42	
March	73		16		57		43.97	
April	28		84		56		57.58	
May	88		40		48		61.32	
June	93		49		44		71.16	
July	94		54		40		74.51	
Aug.	90		53		37		73.27	
Sept.	88		46		42		68.28	
Oct.	80		28		52		55.08	
Nov.	66		13		53		41.75	
Dec.	56		10		46		34.54	
Mean							53.81	
Mean of	1806	1807	1808	1809	1810	1811	1812	1813
	54.10	54.4	56.4	54.4	52.77	56.62	52.65	52.76

The mean of the months, 53°.81, added to the mean of the years, 54°.28, produces a compound mean within an indifferent fraction of 54°.

* "The greatest cold ever observed at this place [Cincinnati], was on the 8th of January, 1797, when, according to Governor Sargeant, the Mercury fell to 18° below zero. In Kentucky, nearly half a degree south of this town, Dr. Doniphan, during the same month, observed it to fall 14° below zero." Drake's View, page 24.

No. LXIX.—*Table of the prevailing winds at Cincinnati, N. lat.* 39° 07′, *long. W. C.* 7° 26′ *W., as given in Dr. Drake's Picture of Cincinnati, page* 98.

MONTHS.	N. E.	N.	N.W.	W.	S. W.	S.	S. E.	E.
January	8	1	21	6	13	2	6	3
February	8	1	14	5	13	1	5	0
March	11	1	10	5	16	1	10	0
April	10	1	8	3	24	1	7	4
May	10	0	10	4	19	1	7	5
June	12	5	7	2	23	1	9	6
July	11	2	11	4	19	1	6	1
August	10	1	12	1	23	1	6	1
September	9	0	8	3	23	1	6	2
October	6	1	10	4	24	1	9	2
November	6	1	10	7	13	3	9	2
December	5	0	15	6	11	1	7	2
Amount	106	14	136	50	221	14	87	16
Proportions of 1000	164	22	211	77	343	22	135	26

Dr. Drake's View of Cincinnati, from which this table and No. 70 were taken, is a work of great merit, and gives a permanent value to any document depending upon it for authority; but in this, as in most other cases of observation in the United States, the tables of prevalent winds deserve more confidence than those of mean temperature. It is not too much to say, that tables 65 and 69 decide the prevalent winds of Ohio Valley.

Table No. 70 and 71, were originally published in Drayton's View of South Carolina, and re-published in Holme's Annals, Vol. II. page 209.

No. LXX.—*Table of mean temperature at Charleston, South Carolina, N. lat.* 32° 44′.

Yrs.	Thermometer.	Spring.	Summer.	Autumn.	Winter.	Annual Extremes	Mean of the Year.
1750	Highest	85	96	91	73	96	60.05
	Lowest	27	52	44	25	25	
1751	Highest	84	94	91	76	94	56
	Lowest	30	67	40	18	18	
1752	Highest	87	101	96	81	101	59½
	Lowest	32	60	55	18	18	
1753	Highest	81	91	90	76	91	59½
	Lowest	34	59	44	28	28	
1754	Highest	84	93	88	75	93	57½
	Lowest	22	54	48	31	22	
1755	Highest	81	90	87	70	90	58
	Lowest	27	53	33	26	26	
1756	Highest	79	96	90	71	96	61½
	Lowest	45	49	41	27	27	
1757	Highest	78	89	90	75	90	57½
	Lowest	25	50	49	31	25	
1758	Highest	85	94	92	77	94	59½
	Lowest	29	46	43	25	25	
1759	Highest	71	93	90	79	93	60
	Lowest	31	51	45	28	27	

No. LXXI.—*Table 2nd, for the mean temperature of Charleston, South Carolina.*

Yrs.	Thermometer.		Annual Mean.
1791	Highest	90	59
	Lowest	28	
1792	Highest	93	61½
	Lowest	30	
1793	Highest	89	59
	Lowest	30	
1794	Highest	91	62½
	Lowest	34	
1795	Highest	92	60
	Lowest	29	
1796	Highest	89	53
	Lowest	17	
1797	Highest	88	55
	Lowest	22	
1798	Highest	88	59½
	Lowest	31	
1822	Highest	64	61.91
	Lowest	60	
1823	Highest	67¼	56.80
	Lowest	62½	
1824	Highest	72	66.85
	Lowest	63	

Mean of the 10 years in table 70—59°.90
Mean of the 8 first years in table 71—58.81
Mean of the 3 last years in do. 61.85
Mean of the 3 preceding 60.18

The three latter years in table 71, were taken from Dr. Lovell's Register, and yield a mean 2°.64 lower than given in the average table, page 63 of the Register. The mean in the latter, appears to have been deduced from the annual mean at 7 A. M., and 2 and 9 P. M.; I deduced the mean for table 71 by taking Dr. Lovell's mean for each year, adding them together and dividing by 3.

No. LXXII.—*Monthly mean temperature at Richmond, Virginia, N. lat.* 37° 04′, *long.* 0° 26′ *W. from W. C., from a mean of two years, by Mr. J. A. Chevallie; and liberally procured for insertion in the* "View," *by Mr. Herman Boyé.*

Month.	1824	1825	1826	1827	Mean
January	42	34.6	33.2	25	33.7
February	$35\frac{1}{3}$	39	41	43.9	39.8
March	43	50	49.6	46	47.1
April	53	55	57.8	59	54.7
May	64.4	64.4	68	64.5	65.4
June	75	73.6	$73\frac{1}{3}$	73.6	73.8
July	79	80	74.8	76.8	77.6
August	$74\frac{1}{3}$	76.4	72.9	75	74.8
September	66.8	65.7	68.9	67.2	67.1
October	$57\frac{1}{3}$	60	56.8	56	57.5
November	47.2	41.8	44	43.8	44.2
December	40.8	33	34.2	44.6	38.1
Mean	56.5	56	55.7	56.5	56.1

The observations from which this table was compiled were made at morning, noon, and night.

When compared with the corrected mean for Washington, page 385, that for Richmond ought to be 55°.3. The difference of latitude between the places is 109 minutes, an equivalent to 1°.8 of Fahrenheit; from whence we have 53°.5+1°.8=55°.3 mean corrected for Richmond, 8 tenths less than deduced by the elements in table 72.

No. LXXIII.—*Abstract of the prevailing winds at various points of the United States, above N. lat. 35°. The whole numbers reduced to proportions of* 1000.

Places of Observation.	Table No.	Page.	NE.	N.	NW.	W.	SW.	S.	SE.	E.
Polar Sea,...........	38		122	100	394	79¾	132	32	112	28
Fort Brady,.........	39		32	58	159	274	79	86	241	73
Basin of Columbia,...			130	20	118	44	401	33	200	53
Valley of Missouri,....			117	58	294	73	244	21	141	48
Council Bluffs,.......			71	196	151	53	101	246	134	61
Fort Howard,........			384	23	23	26	535	13	3	6
Fort Crawford,.......			33	186	250	53	101	190	137	10
New Harmony,.......			101	131	124	165	221	155	65	33
Cincinnati,...........			164	22	211	77	343	22	135	26
Washington City,.....			165	65	257	72	238	96	90	14
Baltimore,...........			194		303		208		295	
Philadelphia,.........			196	49	227	120	255	58	69	32
Germantown,.........			97	48	194.3	301	167	49	64	78.5
New York,..........			116	24	301	69	210	130	134	29
Newport, R. Island,...			112	101	218	61	335	66	89	33
Eastport, Maine,......			68	109	229.7	159	123	234	26	69
			2102	1190	3454	1638	3693	1231	1929	593.5

It is not a little remarkable, that of this aggregate of 15830 decimal numbers, 8785, or upwards of 55 hundredths of the whole are from the three western points, NW., W., and SW.

No. LXXIV.—*Abstract of the prevailing winds at various points in the United States, below N. lat. 35°. The whole reduced to proportions of* 1000.

Places of Observation.	NE.	N.	NW	W.	SW.	S.	SE.	E.
Baton Rouge,......	236	5	133	83	208	94	153	100
Pensacola,.........	417	36	97	47	83	25	250	58
Cantonment Jessup,	146	79	99	65	151	109	235	127
Tampa Bay,........								
St. Augustine,.....	416	36	97	47	83	25	250	58
Charleston, S. C.,..	228	59	38	57	127	169	186	126
Smithville, N. C.,..	42	293	109	141	52	299	21	53
Amount,......	1485	508	573	440	704	721	1095	522

No. 73 and 74, demonstrate a curve in the general course of the winds, advancing from the northern to the southern extremity of the United States. The theory laid down in my Lectures on the Climate of the United States, was, that the winds uninfluenced by local interruptions, followed a parabolic curve, from the polar to the tropical regions of the earth, with the sweep of the curve eastward. This would presuppose the prevalent wind from the NW. in high northern, and SE. in high southern latitudes, gradually inflecting, and becoming NE. or SE. near the tropics. The prevalent winds along the Atlantic coast of the United States, sustain the theory, beyond even my own hopes, and evince far less compliance with local influence than I anticipated. All the tables of wind, in this chapter, demonstrate a regularity in the winds of the northern temperate zone of America, the northern Atlantic, and western Europe, which could scarcely be supposed probable over a surface so greatly diversified. We now find that western winds do not fall on western Europe, because the Atlantic ocean stretches from that quarter, but because the natural and unchangeable trade wind of Europe is from the western side of the meridians, as it is, with little exception, round the earth in those latitudes.

A cause must be deep and permanent, the effects of which are uniform from the Pacific coast of the continent of North America, to the centre of Europe.

Without the least hope of deciding so intricate and important a question as the revolutions of the atmosphere, I have with considerable labour prepared most of the preceding tables, and hope to have, by their means, condensed a mass of facts drawn from experiment, which may aid in the solution of a problem of great interest in physical science; that is, has or has not the climate of the United States undergone any radical change since the original settlement by Europeans? Such a problem had its origin in a fancied change, of a similar nature, in Europe. How far the climate of Europe has meliorated in modern times, has occupied the pens of the first men of the present age, and has resulted in conclusions, directly contradictory to what may be without arrogance called a vulgar error. In the 27th volume of *Annales de Chimie et de Physique*, page 408, we find the following facts expressly on this subject.

"The invention of thermometers does not remount but little beyond the year 1590; we may even add that before 1700, these instruments were neither correct nor capable of comparison. It is then impossible to determine with precision, for any part of the earth, what was its temperature in very remote ages: but restricting ourselves to these limits, and seeking only, for example, if at present the winters are more or less rigorous than in times past, we may supply direct observation, by taking from ancient authors, passages relative to several natural phenomena; such as the congelation of rivers, seas, &c. The small number of citations of this kind which I have connected here, prove, I think, even giving due allowance for such exaggerations as may be found in authors, that in Europe in general, and France in particular, the winters for some centuries, have been at least as severe as at present.

"In the first century before the Christian era, at the mouth of the Paulus Meotis [*Straits of Caffa*],

the frost was so intense, that one of the generals of Mithridates defeated the barbarian cavalry, on precisely the same place where, in summer, they had been before defeated in a naval battle.

"In A. D. 400, the Black sea was entirely frozen, as was the Rhone in all its length. Such a phenomenon indicated a temperature of at least 18° centigrade, °.4 Fahrenheit, below zero. When the Gulf of Venice was frozen in 1709, the thermometer in that city fell to 20° centigrade, 4° Fahrenheit, below zero.

"In A. D. 462, the army of Theodomer crossed the Danube on the ice. The Var, a small river of France and Italy, falling into the Mediterranean, between Nice and Monaco, was frozen, which effect demanded a temperature of 10° or 12° centrigrade, below zero.

"A. D. 763, the Black sea and Dardanelles were frozen.

"A. D. 822, loaded carriages traversed on the ice for upwards of a month, the Danube, the Elbe, and the Seine. The Rhone, the Po, and the Adriatic sea were frozen. See A. D. 400.

"A. D. 829, on the authority of Abd Allatif, translated by M. Silvestre de Sacy, when the Jacobite Patriarch of Antioch, Dionysius of Telmahre, attended the Khaliffe Mamoun into Egypt, they found the Nile frozen.

"A. D. 860, the Adriatic sea and the Rhone were frozen, demanding a temperature of 20° centigrade, 4° Fahrenheit, below zero.

"A. D. 1133, the Po was closed from Cremona to the sea, and the Rhone crossed on the ice. Wine froze in the cellars:—at least 18° centigrade, °.4 Fahrenheit, below zero.

"A. D. 1216, the Po and the Rhone frozen; and again in 1234, the same rivers were closed, and loaded carriages traversed the Adriatic sea on the ice near Venice. (20° centigrade, 4° Fahrenheit, below zero)

"A. D. 1236, the Danube closed for some considerable time.

"A. D. 1292, loaded carriages crossed the Rhine below Brisach, and the Categat sound completely closed.

"A. D. 1302, Rhone frozen (—18° cent., °.4 Fahrenheit below zero.)

"A. D. 1305, the Rhone, and all the other rivers of France were frozen.

"A. D. 1323, the Rhone frozen. Travellers on foot and horseback passed on the ice from Denmark to Lubec and Dantzic.

"A. D. 1358, ten feet of snow at Bologna in Italy.

"A. D. 1364, the Rhone frozen to Arles; loaded carriages passed on the ice. —18° cent., —°.4 Faht.

"A. D. 1408, the Danube frozen in all its course; one sheet of ice from Norway to Denmark. Carriages crossed the Seine on the ice.

"A. D. 1434, frost commenced at Paris, the last of December, 1433, and continued during three months, less 9 days; recommenced towards the end of March and continued to the 17th of April. The same year it snowed in Holland 40 consecutive days.

"A. D. 1460, the Danube and the Rhone frozen.

"A. D. 1493, the port of Genoa frozen.

"A. D. 1507, the port of Marseilles frozen in all its extent. (—18° cent., at least, —°.4 Faht.) On the day of Epiphany, 3 feet of snow fell at the same city.

"A. D. 1468, the wine had been reduced to ice and cut with an axe; and in 1544, a similar severity of cold in France.

"A. D. 1565, the Rhone was frozen to Arles. (—18° cent., —°.4 Faht.)

"A. D. 1568, from the 11th to the 21st of December, the Rhone passed on the ice. (—18° cent. at least.)

"The winter of 1570–1571, from the end of November to the end of February, was so severe, that

all the rivers, even those of Languedoc and Provence, were so completely frozen that they were passed with loaded carriages. (Mezerai.)

"A. D. 1594, the sea at Marseilles and Venice frozen. (—20° cent., —4° Faht.)

"A. D. 1603, loaded carriages passed the Rhone on the ice. (— 18° cent., —°.4 Faht.)

"The winter of 1621–1622, the Venitian fleet arrested by the ice in the lagoons of Venice; in 1638, a similar event with the French gallies at Marseilles; either event demanding a temperature of —20° cent. or — 4° Fahrenheit.

"(A. D. 1645, the Swedish army passed from Holstein into Zealand on the ice.)

"In the winter of 1655–1656, the Seine was closed from the 8th to the 18th of December. It was again frozen, without interruption, from the 29th of December to the 28th of January. A new frost recurred a few days after, and continued until in March. (Bouillaud.) The ensuing winter, 1657–1658, an uninterrupted frost from the 24th of December, 1657, to the 8th of February, 1658. Between the 24th of December and the 20th of January the cold was moderate, but afterwards acquired an extreme intensity. The Seine was entirely closed. A slight thaw took place on the 8th of February, but the frost again recurred and continued to the 18th. It was in 1658, that Charles X, king of Sweden, traversed the Little Belt with his army, artillery, caissons, baggage, &c.

"A. D. 1662–1663. Intense frost at Paris, from the 5th of December to the 8th of March.

"A.D. 1676–1677, continued and very intense frost from the 2d of December to the 13th of January; the Seine was closed 35 consecutive days.

"A. D. 1684, the Thames, at London, frozen 11 inches thick, and traversed by loaded wagons.

"A. D. 1709, (perhaps the most intense season which has ever occurred within the range of histo-

ry,) the Adriatic sea, and the Mediterranean from Genoa by Marseilles to Cette, frozen. All the rivers and narrow seas of Europe frozen. (—20° cent., —4° Faht.)

"A. D. 1716, booths erected on the Thames at London.

"A. D. 1726, sledges passed from Copenhagen to Sweden.

"A. D. 1740, the Thames, at London, again frozen.

"From 1749 to 1781, (33 years,) the thermometer, in Provence, never fell below —9° cent. (20¾°Faht). This period of 33 years, afforded no instance of a cold of from 15° to 18° below zero, as formerly; some persons already concluded that the climate had meliorated; but in 1789, this illusion was dissipated, because in that year, they experienced at Marseilles, a cold of —17° cent. 1°.4 Faht.

"From 1800 to 1819, the thermometer did not fall below —9° cent., 15°.8 Faht., in the department of the Mouths of the Rhone, but in 1820, as in some of the remarkable seasons we have noticed in this catalogue, they experienced a cold of —17½° cent., 2° Faht. above zero.

"Thus, whether we consider the intensity of cold, or we examine at what intervals of time extraordinary cold is reproduced, we see no reason to admit, that in a period of 1400 years, the climate of Provence has varied worthy notice."

The facts and conclusion in these extracts are of great force in deciding on the general principles of meteorological revolution. They ought to put us on our guard against considering the temperature of a few years as sufficient to determine a revolution in phenomena so greatly varied as those of aerial temperature; and against forming comparative estimates of relative climate, as is usually done so greatly to the disadvantage of that of the United States. The two subjoined tables taken from *Les Annales de Chimie et de Physique*, will serve to exhibit the extremes of temperature in central parts

of Europe. "Whenever the thermometer departs ever so little from its habitual limits, the public pay great attention to the range of that instrument, and, in general, are not slow in coming to the conclusion that they have never observed it so high or so low. The following table, in which I have collected the indication of the greatest degrees of cold and heat experienced at Paris and other points of the globe, since the invention of the thermometer, may be of some utility."*

No. LXXV.—*Maximum of Cold.*

Date.	Reaum.	Cent.	Faht.
1665, February 6,	— 17°.6	— 21°.2	— 6°.16
1709, January 13,	— 18.5	— 23.1	— 9.8
1716,	— 15.	— 18.7	— 1.22
1729,	— 12.2	— 15.5	+ 5.9
1742, January 10,	— 13.6	— 17.0	+ 1.4
1747, January 14,	— 10.9	— 13.6	+ 6.8
1748,	— 12.2	— 15.3	+ 4.46
1754, January 8,	— 11.3	— 14.1	+ 6.7
1755,	— 12.5	— 15.6	+ 5.92
1767,	— 12.2	— 15.3	+ 4.46
1768,	— 13.7	— 17.1	+ 1.22
1771,	— 10.9	— 13.6	+ 6.8
1776, January 29,	— 15.3	— 19.1	— 2.38
1783, December 30,	— 15.3	— 19.1	— 2.38
1788, December 31,	— 17.8	— 22.3	— 8.14
1795, January 25,	— 18.8	— 23.5	— 10.30
1798, December 26,	— 14.1	— 17.6	— .32
1820, January 11,	— 11.4	— 14.3	+ 6.26
1823, January 14,	— 11.7	— 14.6	+ 5.72

At Paris have occurred
In 1776, 25 days consecutive, of intense frost.
1783, 60 do. do.
1795, 42 do. do.
1798, 32 do. do.

* Annales de Chimie, &c.

No. LXXVI.—*Maximum of Heat.*

Date.	Reaumur.	Cent.	Faht.
1705, Aug. 6,	+ 27.0°	+ 33.8°	+ 92.8°
1706, Aug. 8,	+ 28.2	+ 35.3	+ 95.54
1753, July 7,	+ 28.5	+ 35.6	+ 95.7
1754, July 14,	+ 28.0	+ 35.0	+ 95
1775,	+ 27.8	+ 34.7	+ 94.46
1793, July 8th and 16th,	+ 30.7 & 29.8	+ 38.4 & 37.3	+ 98.54
1800, Aug. 18,	+ 28.4	+ 35.5	+ 95.9
1802, Aug. 8,	+ 29.1	+ 36.4	+ 97.52
1803,	+ 29.4	+ 36.7	+ 98.24
1808, July 15,	+ 29.0	+ 36.2	+ 97.16
1818, July 24,	+ 27.6	+ 34.5	+ 94.1

Having closed the collection of comparative tables on temperature and prevailing winds, I proceed to a summary review. It has been demonstrated, as far as the data in my analysis are admitted as authority, that agreeable to the laws of temperature stated in page 350, the winter cold over the United States, as every where else on earth, is in direct intensity with height, latitude, and exposure; and that the interior states being more exposed to the influence of a central, elevated, and frozen table land, have winters much more severe than experienced on similar latitudes on the Atlantic slope; and farther, that the interior summers are equally in excess.

These conclusions are drawn from the range of the thermometer, and from the freezing of rivers. So far, however, mere facts are stated, but it has been my wish to adduce the causes, and in pursuance of that design I have traced the prevailing winds of the northern temperate zone of the earth. That the

air over this zone, though partially influenced by local features, does not derive its general course from the relations of land and water, has been shewn conclusively.

Ever since North America was peopled by English and French colonies, an opinion has prevailed that as the timber was removed the temperature was raised, or, in other words, the winter seasons had gradually become milder. Employed 10 or 12 years in exploring the prairies of Louisiana, I had ample means to test the seasons of a country naturally devoid of forest trees, and in the frequent and sometimes not slight snows of Opelousas, N. lat. 30½°, I, as early as 1805, became convinced that removing timber must produce the very reverse of melioration, and then suspected, what is now proven, that in very open countries the range of the thermometer must be augmented. These ideas were thrown out in my Louisiana, and still farther in my Emigrant's Guide, and Geographical Dictionary, and encountered some obloquy. It was obloquy which I felt lightly, trusting to time, and not in vain.

One of the best statistical writers in Europe, the Abbe Rosier, in his *Cours d'Agriculture*, derives from the removal of forests the cause why the vines in some part of France have perished, where two centuries past they were cultivated in open fields. It was evident to this philosophic expounder of nature, that removing shelter must have the same effect which would happen by opening a window exposed to the north-west, that is, increase of cold.

Independent, however, of the thermometer or freezing of rivers, vegetables afford most precious atmospheric indicia. One of these criteria I had full opportunity to examine. I surveyed southern Louisiana, from the Sabine eastward, and found the live oak, quercus sempervirens, flourishing along the rivers in the Delta and vicinity; but when the great body of woods, which bounds the Delta, above

the marshes and prairies, is passed, and the northwest winds from Texas have full sweep along the Calcasiu and Sabine, the live oak ceases. In the Delta this vegetable is found as high as N. lat. 30° 22′, rising to the majesty of a forest tree; yet in its utmost range in the basin of Mississippi, this and the Chaemerops, or dwarf palm, cease far south of their limit on the Atlantic coast; the large palm (cabbage tree) is not found in Louisiana. The live oak rises to considerable height and column as high as the mouth of Cape Fear river, N. lat. 34°, full 3½° beyond its greatest northern residence in the central basin.

In Louisiana the orange tree cannot be cultivated to much advantage above N. lat. 30°, and ceases altogether about a degree farther north. The sugar cane, with a slightly higher locality, does not flourish beneficially much above the orange. Both these vegetables are profitably cultivated along the Atlantic coast as high as N. lat. 33° 30′. "The sweet or China orange begins to be cultivated in the open air in South Carolina, near the town of Beaufort, 33° 25′, where large groves are to be met with, not only for ornament but fruit. On the islands of Georgia they are cultivated extensively, and with great profit. The sugar cane, both Creole and Otaheite, grows into a crop, so as to be profitable, from Sapelo island 31° 30′, near the mouth of the Alatamahah, on to Florida. The cane has ripened very well at Savannah, N. lat. 32° 05′, and has been with partial success attempted so far north as Beaufort district, South Carolina, lat. 33° 30′."*

We thus find tender vegetables, either growing indigenous, or cultivated as objects of emolument, on latitudes along the Atlantic coast, where no art could produce a similar effect directly west on the Mississippi. Natches stands on a hill, or series of

* N. A. Ware, Esq. to the author of this View.

hills, about 100 feet above the ordinary level of the Mississippi at N. lat. 30° 33,′ almost directly west from Sapelo island, and at Natches or even on the low banks of the Mississippi, opposite that city, neither the orange or cane could be cultivated. The thermometer whilst I myself resided in the vicinity fell to 12° above zero, near that city, in December 1799.

No winter passes at Natches without severe frost, and snows are there annual and not seldom deep, and resting on the ground from 5 to 10 or 12 days. I once, January 1812, witnessed a snow at Opelousas 11 inches deep, which did not entirely disappear in less than 7 or 8 days.

The freezing of rivers is also a most conclusive comparative test of climate. The Ohio and all its branches, as well as other rivers more westward, are more deeply, frequently, and longer frozen than those on the Atlantic slope by a difference of 3 or 4 degrees of latitude.

Having established the very important fact in meteorology, that the wind of the United States forms only a part of a general, if not universal, current of air which sweeps round the world over the northern temperate zone, deriving its course from the motion of the earth itself, combined with the effects of heat and cold on the atmosphere. Having demonstrated that aerial temperature in the United States depends, as elsewhere, for its intensity upon relative latitude, elevation, and exposure, the conclusion follows that the supposed mildness of the Ohio valley, so much insisted upon by Volney and others, has really no existence, but that on the very contrary, the cold of winter is several degrees more severe in the interior than on the Atlantic border of the United States, upon any given latitude.

If we turn to the tables, and analyse their contents, we discover that the wind from the Pacific ocean over North America, the Atlantic ocean, and western Europe, is by great excess from the west-

ern side of the meridians. So constantly do the prevailing currents of air set from the west over the continent of North America, that the orchards and forests generally, particularly along the Atlantic slope, invariably incline to the eastward or south-eastward. This interesting phenomenon may be seen by any person travelling along the roads, and it is in an especial manner discernible if the traveller is passing in an east or west direction.

The prevalence of such universal current carries the moisture of the Atlantic on the western coasts of Africa and Europe, and indeed in a greater or less extent produces a mildness or uniformity of annual temperature on western, and severity, or extremes of temperature, on eastern coasts. This exposition of climate was laid before my classes in Philadelphia, in January and February 1821, and formed part of a Course of Lectures on the particular climate of the United States. Recently I have had the pleasure to peruse the American Quarterly Review, No. VI., and found at pages 529—31, under Art. North-west Passage, the following:

"It has been universally admitted that, the latitude being the same, western coasts are more temperate; and the neighbouring continent [America] gives us positive evidence of this. "The vegetation," says Chiamisso, "in the interior of Kotzebue's sound [under the arctic circle N. lat. 66° 30′—66° 42′] is constantly higher (more advanced) than in the interior of St. Lawrence's bay. The willows are higher, the grasses richer, all vegetation more juicy and stronger." Kotzebue, who had the command in this voyage, says, "Ice and snow maintained their rule here (in Asia) since last year, and in this state we find the whole coast; while in America, even the summits of the highest mountains are free from snow; there the navigator sees the coast covered with a green carpet, while here (Asia) black massy rocks frown upon us with snow and icicles."

"Isothermal lines drawn from this part of America, would incline much to south, making very oblique ones. While vegetation is green and flowery in Kotzebue's sound, in 66° 42′ 30″, desolation pervades the coast of Labrador, in 55°, and perpetual frost rules at 60° on the coast of Greenland. A determined push to double the Icy Cape, could scarcely fail to be successful, unless the summer should be shorter and colder than usual."

"For the discovery of the existence of a passage over this part of the Polar sea, (north from North America,) we feel assured the voyage has always been commenced where it ought to have terminated. The voyage should be made *with*, and not *against* the currents. There is much difference between stemming a current surcharged with ice, and sailing or floating with it. Parry was six weeks making Melville Island, from the entrance of Sir James Lancaster's sound, 600 miles, which, on his return to the eastward, was run in six days. Captain Franklin sailed from Copper Mine river in two canoes to Point Turnagain, having coasted the shore for 555 geographical miles [nearly east and west, between lat. 67° and 68°, equal to about 200 English miles,] with little or no difficulty. This distance in a direct line, would have taken him to the coast opposite Repulse bay. We are yet without accurate observations on the force of the currents, into and out of the Polar sea. Kotzebue's calculations certainly seem to us to be extravagant. He supposed the current to pass northwardly through Bhering's strait, at the rate of two miles per hour. This is more than double the rapidity mentioned by Cook. That the current flows perpetually to the north through this strait, can no longer be doubted. The testimony of the two navigators mentioned above, as well as that of Clerke and Glolotoff, establishes the fact beyond contradiction. It has been stated, that the commander of this Russian expedi-

tion having passed round Icy Cape, was somewhat alarmed, lest he should not be able to overcome the current on his return."

That the attempt to circumnavigate North America from the east, was proceeding in direct opposition, not alone to the ocean currents, but what was of greatly more consequence, against prevalent winds, and that if ever a navigable opening was found round the northern coast of North America, or to render such a passage useful when found, it must be navigated from the west, were the postulata, on which my lectures on climate were founded. If I had had my own choice, I could have demanded no more decisive evidence from actual experiment, to sustain my theory, than has been afforded by the voyages of Kotzebue, Parry and Franklin, and by recent meteorological observations made in the United States and Europe.

In my lecture room I had maps and charts, with isothermal lines drawn upon them, in order to trace the cause and demonstrate the principles in nature from which followed as a necessary effect, the regular eastern currents of air over the temperate zones, and polar circles of the earth; and of course, why western must have a more uniform aerial temperature and more moist atmosphere on a given latitude than eastern coasts. I then showed satisfactorily why tender fruits, and the cereal gramina, were cultivated on western Europe so much more northward than on the eastern coasts of America and Asia.

With but slight modification from difference of local features, every observation made in this chapter respecting the northern, will apply to the southern temperate zone, and particularly to voyages of discovery attempted towards the southern pole. To give any rational probability of success, the vessels ought to proceed in both instances eastward from the meridians. To explore the southern

polar circle, the course ought to be south-eastward from America, Africa, and New Holland. It may appear to some, presumptuous for any individual inexperienced as a navigator, to speak thus positive from his desk; but would not candour acknowledge that the inductions are fair from the adduced facts?

I have been the more particular in the elucidation of climate, and on the exposition of the combined effects of temperature and prevailing winds, as I have found in books of no ordinary character the theory stated, that the local temperature of given places not only could, but had underwent radical change. The natural bent of the human mind generally inclines to melioration, and supposes that clearing the surface of the earth of trees softens the winters of both Europe and America. When, however, we quit the uncertainty of hypothesis and proceed to reason from fact, what are our conclusions? At a single glance on a map, we find that even on the northern temperate zone, and northern polar circle where land is most engrouped, so much of the surface of the earth admits of no possible modification by man, that all his labours comparatively disappear in a general view. Oceans, extensive seas, northern frozen and uninhabitable regions, extensive naked and unchangeable plains and mountains, forming so very great proportion of the entire surface, renders all the labour of man an inconsiderable datum in the list of natural causes, and leaves the mind, when investigating meteorology, to regard past and present ages as an impassable PRESENT. When we are taught that the planet is moving round its primary, in a given and unvarying orbit; when we advance nearer, and are shown, that this planet is enveloped by an atmosphere extremely susceptible to the influence of heat, but that this atmosphere is a ponderous body carried round with the more solid parts of the planet, and again, when we examine the phenomena of aerial motion, we are led by every prin-

ciple of reasoning to regard the revolutions of the atmosphere as permanent in their recurrence as are the causes from which those changes emanate.

William Dunbar of Natchez, formerly of Scotland, well known when living as amongst the most diligent observers, and most scientific men of his adopted country, resided between thirty and forty years near Natchez, at about N. lat. 31° 28′. The education and indefatigable attention of this philosopher to the phenomena of nature, and the abundant means placed at his disposal by an ample fortune, put him, as far as the southern climate of the Mississippi basin is concerned, at the very head of all observers.

After recounting the phenomena of the great sleet and snow storm of that country, which occurred in the end of January and first of February 1800, and some other meteorological changes of that year, Mr. Dunbar states expressly that on the 12th of December, 1800, the thermometer at his house fell to 12° above zero, and proceeds thus:

"It is with us a general remark that of late years the summers have become hotter, and the winters colder, than formerly. Orange trees, and other tender exotics, have suffered more in the neighbourhood of New Orleans within these four or five years, than before that period; the sugar cane also has been so much injured by the severity of the first of the two last winters, as greatly to discourage the planters, whose crops in many instances have fallen to one-third, or less, of their expectations. In former years I have observed the mercury of the thermometer not to fall lower than 26° or 27°; but for a few years past it has generally, once or twice in the winter, fallen as low as from 17° to 20°, and on the 12th December, 1800, as above noticed, it was found sunk to 12°, which has hitherto had no parallel in this climate; indicating a degree of cold, which in any country would be considered consider-

able, and probably may never again be produced by natural means in lat. 31° 30′."*

"As this apparent alteration of climate, has been remarked only for a few years, and cannot be traced up to any visible, natural, or artificial change of sufficient magnitude, it would be in vain to search for its physical cause. Dr. Williamson and others have endeavoured to show that the clearing, draining, and cultivation extended over the face of a continent, must produce the double effect of the relaxation of the rigors of winter, and an abatement of the heats of summer. The former is probably more evident than the latter; but admitting the demonstration to be conclusive, I would enquire whether a partial clearing, extending 30 or 40 miles square, [or to 300,000, or 3,000,000] may not be expected to produce a contrary effect, by admitting with full liberty the sunbeams on the uncovered surface of the earth in summer, and promoting during winter a free circulation of cold northern air."†

Mr. Mackenzie, after remarking on the sterile

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* In December, 1800, I was myself residing about 8 miles from Natchez, and about 13 miles from Mr. Dunbar's house. I can attest the great severity of the season; but as I resided on the southern part of the Mississippi basin until 1815, and was upwards of 10 years of the time almost constantly exposed to the open air, I am fully persuaded that December 1800 was by no means the utmost severity of cold I witnessed in that region. In February, 1807, the creeks between Natchez and Red river were frozen, and in many instances to more than an inch in thickness. In January, 1812, snow fell at Opelousas, N. lat. 30° 30′, to a depth of 11 inches; and in the latter days of December, 1814, the ponds and lagoons around New Orleans were frozen so as to admit half grown boys to skate or play on the ice.

† Transactions of the American Philosophical Society, vol. vi. p. 40.

Boreal regions of North America, continues to observe, "The climate must necessarily be severe in such a country as we have described, and which displays so large a surface of fresh water. Its severity is extreme on the coast of Hudson's bay, and proceeds from its immediate exposure to the northwest winds that blow off the Frozen ocean. These winds cross directly from the bay over Canada, and the British dominions on the Atlantic, as well as over the eastern states of North America, to that ocean; where they give to that country a length of winter astonishing to the inhabitants of the same latitudes in Europe.

"These winds even continue to retain a great degree of force and cold in their passage over the Atlantic, particularly at the time the sun is in its southern declination. The same winds which come from the Frozen ocean, over barren grounds and across frozen lakes and snowy plains, bounded by rocky mountains, lose their frigid influence as they travel in a southern direction till they get to the Atlantic ocean, where they close their progress.

"Is not this a sufficient cause for the difference between the climate in America and that of the same latitude in Europe?"

"It has been frequently advanced that the clearing away the wood has had an astonishing influence in meliorating the climate in the former; but I am not disposed to assent to that opinion in the extent which it proposes to establish, when I consider the very trifling proportion of the country cleared, compared with the whole. The employment of the axe may have had some inconsiderable effect; but I look to other causes. I myself observed in a country which was in an absolute state of nature, *that the climate is improving;* and this circumstance was confirmed to me by the native inhabitants of it. Such a change, therefore, must proceed from some predominating operation in the system of the globe,

which is beyond my conjecture, and indeed above my comprehension, and may, probably, in the course of time, give to America the climate of Europe.

"The climate on the west coast of America, assimilates much more to that of Europe in the same latitudes. I think very little difference will be found, except such as proceeds from the vicinity of high mountains covered with snow. This is an additional proof that the difference in the temperature of the air proceeds from the cause already mentioned."*

M. de Humboldt alludes to this passage in Mackenzie's travels, in his political essay on New Spain, in these words: "It is even believed by the Indians, in the vicinity of the north-west coast, that the winters are becoming milder yearly. This mildness of climate appears to be produced by the north-west winds, which pass over a considerable extent of sea. Mr. Mackenzie, as well as myself, believes that the change of climate observable throughout all North America, cannot be attributed to petty local causes; to the destruction of forests for example.†"

Here we have in the examples of two of the most respectable and extensive travellers who, from Europe, have visited and traversed America, instances of that greatest defect in human reasoning; that is, assuming a postulate and then proceeding as if it was an established theory. Both have, with much good sense, rejected one popular error, that clearing a few thousand square miles from wood could permanently, in any country, affect its mean temperature, and yet both supposed a real change in operation. The credulity of M. Humboldt is the more strange, as the following observations occur in his Personal Narrative. After an elaborate discussion

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* Mackenzie's Voyages. New York edition, p. 286—292.

† Political Essay, vol. ii. p. 258.

on the mean temperature of land and water, he continues: "These investigations are highly interesting to the physical history of our planet. Does the quantity of free caloric remain the same through thousands of years? Have the mean temperatures corresponded to different parallels, augmented or diminished since the last revolution which has altered the face of our globe? We cannot answer these questions in the present state of our knowledge. We are ignorant of every thing that relates to a general change of the climates, as we know not whether the barometric pressure of the atmosphere, the quantity of oxygen, the intensity of the magnetic powers, and a great number of other phenomena, have undergone any change since the time of Noah, of Xisuthris, or Menou. It is only by the comparison of a great number of observations, made in different parallels of latitude, and at different degrees of longitude, that we shall be able to solve the important problem of the increase or diminution of the heat of the earth."*

It is evident from the strain of this quotation, and from the tenor of the general scope of his reasoning on the subject, that M. de Humboldt considered a permanent revolution in the mean temperature of any given place as very problematical; and that, if the occurrence of such revolution was admitted, the operations by which it was performed must have been extremely slow, and the effects on vegetation and the congelation of water only perceptible in the long course of many ages;—and farther, that a change in barometric pressure, or in other words, on the quantum or composition of the atmosphere, is an indispensable requisite in such a revolution.

In fine, it may be fairly inferred, though not so directly expressed, that the opinion of this great philosophical traveller was, that a radical meteoro-

* Personal Narrative, page 283.

logical revolution could be possible, only from a change in the present order of things on this planet, and that as long as the earth revolves in her orbit, with her present distance from the centre of motion, with her axis inclined as it is to the ecliptic, and whilst the two great elements on her surface, air and water, retain their constituent organization and relative quantity, so long will the mean temperature of any given part of the earth maintain a near equality in a cycle of a few years.

These conclusions are rationally drawn from the tenor of all history. View human beings in their relations with domesticated animals and cultivated vegetables, and we find in the same countries, that from the earliest ages, similar modes of life were pursued. The bread-producing, the viniferous, and oleaginous plants; the horse, camel, sheep, elephant, &c. remain restricted to the same geographical limits, over which the vegetables grew and the animals roamed since human observations were put on record.

It is no hazard to assert, after the proofs adduced, that the interior of the United States has a natural climate in perfect accordance with its relative position and height. That the climates on the opposite sides of the western continent exhibit the same specific differences found to exist on like extremes of Europe and Asia. On any given place in the temperate zones of our planet, great discrepancies of mean temperature will occur in successive short periods of time, but in a cycle of 20 or 30, or at most 50 years, all the possible extremes will be included,

CHAPTER XI.

POLITICAL GEOGRAPHY OF THE UNITED STATES.

As a physical section of the earth, the relative position, outlines and geographical extent of the United States, have been given in Chap. II, pages 56 and 57; the great natural features have been traced in detail, in the succeeding parts of this view. In the present chapter it is my intention to trace the political subdivisions, and the existing general and relative population. I may here apprize the reader, that there are many subjects of importance which neither the brevity or scope of the view will admit. My purpose in writing the view was, geographical delineation, and not political disquisition; therefore, whenever the latter is introduced, it is incidental.

The original of the ample tables on population, were published in my Geographical Dictionary. The numbers in table 79 are it is true, speculative in some measure, and in their ultimate aggregate, present a mass well calculated to excite astonishment; but it ought to be observed, that the Anglo-American colonies are the only instances ever afforded on earth, where the human species had a fair and ample chance of rapid and steady accumulation. The augmentation thus far, has excited surprise, and in Europe incredulity, more from the novelty, than from any intrinsic anomaly in physiology. Where man labours for himself, and where the fruits of his labour are secured to him, and where the nation and the government are the same identical body, there is no assignable limit to population. There has perhaps never yet been a well governed and surplus number of people in existence, and it may be doubted whether such a phenomenon is possible.

No. LXXVII.—*Population of the United States by the census of* 1810 *and* 1820.

State or Territory.	Extent Sq. Miles.	Population 1810.	Population 1820
Alabama	51,770		143,000
Arkansas	121,340		14,273
Connecticut	5,050	261,941	275,248
Columbia District	100	24,023	33,039
Delaware	2,100	72,674	72,749
Florida	54,000		10,000
Georgia	61,000	252,433	340,989
Illinois	58,900	12,282	55,211
Indiana	34,000	24,520	147,178
Kentucky	37,680	406,511	564,317
Louisiana	48,220	76,556	153,407
Maine	32,200	228,705	297,839
Maryland	10,000	380,546	407,350
Massachusetts	7,330	472,040	521,725
Michigan	174,000	4,762	10,000
Mississippi	45,760	40,352	75,448
Missouri	66,000	20,845	66,586
New Hampshire	8,710	214,460	244,155
New Jersey	7,800	245,662	277,575
New York	46,500	959,049	1,372,812
North Carolina	50,000	555,500	638,829
Ohio	39,000	230,760	581,434
Pennsylvania	47,000	810,091	1,049,458
Rhode Island	1,100	76,931	83,059
South Carolina	33,470	415,115	502,758
Tennessee	40,000	261,727	422,813
Vermont	9,400	217,895	235,764
Virginia	70,000	974,622	1,065,304
Western Territory	1,254,700		
	2,257,300	7,239,903	9,663,313

The classified and progressive population of the United States, are exhibited in

No. LXXVIII.—*Population in* 1810.

Free white males	2,988,141
do. do. females	2,873,952
Total whites,	5,862,093
All other persons except Indians, not taxed,	186,446
Slaves,	1,191,364
Total population 1810,	7,239,903

Population in 1820.

Free white males,	3,992,166
do. do. females,	3,863,916
All other persons except Indians, not taxed,	4,631
Total whites,	7,860,713
Free persons of colour, males,	112,703
do. do. do. females,	120,695
Slaves, males,	784,671
do. females,	746,765
	9,625,547

Of these,

Foreigners not naturalized,		53,655
Engaged in Agriculture,		2,065,547
do. in Manufactures,		349,247
do. in Commerce,		72,397
Population in 1790,	3,929,328	
1800,	5,306,035	
1810,	7,239,903	
1820,	9,663,313	
Calculated for 1828,	13,172,912	

That part of the United States embraced by the census of 1820, comprised an area of 600,000 square

miles, within a trifling fraction, nor has the subsequent extension of population in the last 8 years, materially enlarged the actually inhabited territory. If therefore we assume 600,000 square miles, as the really populated part of the United States, and in round numbers suppose the aggregate inhabitants to amount at this moment, September 1828, to 13 millions, the distributive population would be only 21 and 66 hundredths to the square mile. This estimate is made however, as well as the subjoined table, upon the data afforded by the Census of 1820, which gave, it is probable, an aggregate far below reality. The real number of inhabitants in the United States, was I am well convinced, above 10 millions in 1820, and at this time exceeds considerably 13 millions. In using, therefore, the latter number, we are safe, and would risk no great error by giving 22 to the square mile, as the existing distributive population. With these preliminary remarks, the following table is extracted from my Geographical Dictionary.

No. LXXIX.—*Estimated progressive population of the United States, from the first Census in* 1790 *to* 1940, *or through a period of* 5 *generations of* 30 *years each.*

	Aggregate.	White.	Coloured.
1790	3,929,328		
91	4,057,031		
92	4,188,884		
93	4,325,022		
94	4,465,595		
95	4,610,826		
96	4,750,677		
97	4,905,073		
98	5,064,487		
99	5,229,082		
1800	5,399,026		
1	5,564,293		
2	5,745,132		

	Aggregate.	White.	Coloured.
1803	5,931,848		
4	6,114,633		
5	6,313,358		
6	6,518,542		
7	6,730,394		
8	6,949,230		
9	7,175,080		
1810	7,408,270	5,880,000	1,528,270
11	7,649,038	6,071,100	1,577,938
12	7,897,631	6,268,510	1,629,121
13	8,154,303	6,472,236	1,682,067
14	8,419,317	6,682,683	1,736,694
15	8,692,943	6,900,000	1,792,943
16	8,975,462	7,124,500	1,850,962
17	9,267,164	7,355,770	1,911,394
18	9,567,345	7,594,832	1,972,513
19	9,878,283	7,841,664	2,036,619
1820	10,199,327	8,096.518	2,102,809
21	10,530,805	8,359,654	2,170,151
22	10,873,155	8,632,342	2,240,813
23	11,226,532	8,912,894	2,313,638
24	11,591,394	9,202,562	2,388,832
25	11,968,114	9,501,645	2,466,469
26	12,356,677	9,810,448	2,546,229
27	12,758,269	10,129,287	2,628,982
28	13,172,912	10,458,487	2,714,425
29	13,602,031	10,798,387	2,803,294
1830	14,043,064	11,149,333	2,893,731
31	14,499,463	11,511,686	2,987,777
32	14,970,695	11,884,815	3,085,880
33	15,457,292	12,271,071	3,186,221
34	15,959,602	12,669,878	3,289,724
35	16,478,289	13,082,516	3,395,773
36	17,013,883	13,507,697	3,506,186
37	17,566,782	13,846,697	3,719,085
38	18,137,702	14,296,714	3,840,988
39	18,727,177	14,761,357	3,965,820
1840	19,335,810	15,241,101	4,114,709
41	19,915,984	15,698,334	4,217,650

	Aggregate.	White.	Coloured.
1842	20,513,455	16,169,283	4,344,170
43	21,128,856	16,654,359	4,474,467
44	21,862,721	17,153,988	4,708,733
45	22,518,602	17,668,605	4,849,997
46	23,250,000	18,198,663	5,051,337
47	23,947,500	18,744,621	5,202,879
48	24,665,925	19,306,959	5,358,966
49	25,405,902	19,885,966	5,519,936
1850	26,168,079	20,412,000	5,756,079
51	26,953,121	21,024,918	5,928,203
52	27,761,714	21,655,665	6,106,049
53	28,594,565	22,205,333	6,389,232
54	29,452,402	22,871,492	6,581,910
55	30,335,974	23,557,624	6,778,340
56	31,246,053	24,263,362	6,981,684
57	32,183,435	24,991,261	7,191,132
58	33,148,938	25,740,997	7,407,961
59	34,143,406	26,512,224	7,631,182
1860	35,167,708	27,307,590	7,860,118
61	36,222,739	28,126,815	8,095,924
62	37,349,420	28,970,619	8,338,801
63	38,428,702	29,839,737	8,588,965
64	39,581,563	30,734,928	8,846,635
65	40,769,010	31,656,975	9,102,036
66	41,992,080	32,606,682	9,385,408
67	43,251,842	33,584,880	9,666,962
68	44,649,397	34,592,524	10,056,863
69	45,988,878	35,630,399	10,358,479
1870	47,368,544	36,699,308	10,669,236
71	48,789,600	37,800,287	11,189,313
72	50,253,288	38,934,293	11,318,995
73	51,762,886	40,192,219	11,868,667
74	53,315,772	41,305,285	12,010,487
75	54,915,245	42,545,441	12,369,804
76	56,562,702	43,821,793	12,740,909
77	58,259,583	45,136,444	13,123,139
78	60,007,370	46,490,536	13,516,834
79	61,807,591	47,895,521	14,912,070
1880	63,661,808	49,332,107	14,329,701

	Aggregate.	White.	Coloured.
1881	65,571,662	50,812,070	14,759,592
82	67,538,811	52,436,430	15,102,381
83	69,564,975	54,009,522	15,555,453
84	71,651,924	55,629,807	16,022,117
85	73,801,481	57,298,701	16,502,780
86	76,015,525	59,037,662	16,977,863
87	78,295,990	60,808,790	17,487,200
88	80,644,869	62,633,051	18,018,818
89	83,064,215	64,512,041	18,552,174
1890	85,656,141	66,447,401	19,208,740
91	88,225,825	68,440,823	19,785,000
92	90,872,959	70,494,047	20,378,912
93	93,598,776	72,608,867	20,989,969
94	96,406,739	74,787,131	21,619,608
95	99,298,941	77,030,744	22,268,197
96	102,277,909	79,341,665	22,936,244
97	105,346,246	81,711,913	23,634,333
98	108,506,633	84,163,270	24,343,363
99	111,761,832	86,688,166	25,073,666
1900	115,114,687	89,288,809	25,825,878
1	118,568,127	91,987,473	26,580,654
2	122,125,160	94,747,095	27,278,065
3	125,788,914	97,589,505	28,199,309
4	129,562,581	100,517,190	29,045,391
5	133,449,458	103,532,703	29,916,755
6	137,452,941	106,638,684	30,814,257
7	141,756,529	109,837,852	31,918,677
8	145,823,824	113,132,986	32,976,235
9	150,198,538	116,526,973	33,955,521
1910	154,704,494	120,022,780	35,074,186
11	159,345,628	123,623,361	36,126,409
12	164,125,996	127,332,060	37,210,201
13	169,049,776	131,151,920	38,326,507
14	174,121,269	135,086,477	39,476,302
15	179,344,907	139,139,069	40,660,591
16	184,725,254	143,313,259	41,880,406
17	190,267,011	147,613,655	43,136,818
18	195,975,021	151,042,043	44,439,922
19	201,854,271	156,573,303	45,763,849

	Aggregate.	White.	Coloured.
1920	207,210,000	160,240,502	47,136,763
21	214,147,193	165,047,717	48,550,864
22	220,571,608	169,999,148	50,007,388
23	227,188,756	175,099,121	51,507,607
24	234,004,418	180,352,094	53,052,835
25	241,024,530	185,762,654	54,644,419
26	255,702,444	191,335,532	56,283,751
27	263,374,032	197,075,597	57,972,262
28	271,275,253	202,987,962	59,711,428
29	279,413,510	209,077,000	61,502,770
1930	287,795,915	215,350,000	63,347,851
31	296,419,000	221,311,000	65,238,285
32	305,312,000	228,465,000	67,195,431
33	314,371,000	235,319,000	69,211,293
34	323,905,000	244,379,000	71,287,629
35	333,623,000	246,650,000	73,425,257
36	343,631,000	257,140,000	75,528,013
37	353,940,000	264,854,000	77,793,853
38	364,558,000	272,800,000	80,127,607
39	375,494,740	280,984,000	82,531,435
1940	386,769,572	289,412,000	85,000,000

Relative increase of the white and coloured classes.

Date.	1790	1800	1810	1820
Total,	3929328	5319762	7239903	9663226
Free,	3227046	4429881	6074562	8110108
Slaves,	694280	889118	1165441	1538118
Proportion of Slaves to Free,	$\frac{177}{1000}$	$\frac{167}{1000}$	$\frac{160}{1000}$	$\frac{159}{1000}$

The result of this table astonishes by its mass, but who could have, at the epoch of the revolution, anticipated the actual increase? The arithmetical principles on which the table was constructed, were the positive increments of three periods, 1790 to

1800, 1800 to 1810 and 1810 to 1820. Assuming 3,929,328, the population at the commencement of these periods, a ratio of $3\frac{1}{4}$ per cent up to their termination in 1820, yields results very nearly commensurate with the real enumerations. In order, however, to be within moderate limits, the ratio of $3\frac{1}{4}$ per cent was only continued to 1840, and from thence 3 per centum for the whites, and a slightly decreasing ratio for the coloured caste.

It may not be irrelevant to make some comparative estimates of the distributive population of the United States, as it is stated prospectively in 1940. Rejecting for mountains, sterile plains, and other places incapable of dense population, 727,300 square miles, will leave to the United States 1,500,000 square miles, equal as an aggregate to as great an extent of southern and central Europe, in respect to soil, climate or commercial facility. If we suppose 386 millions distributed over one million five hundred thousand square miles, it gives 257 and a small surplus fraction to each. This falls far short of some large districts of Europe. It is now a well established fact, that the general population of Europe is slowly, and in some of the already dense sections, rapidly on the increase, and those who deny to the territory of the United States, limited as I have reduced the habitable extent, an equality to Europe, have studied comparative geography to little purpose, and those who deny or neglect the influence on population, of moral and political causes, are badly qualified to decide upon the philosophy of history. Volumes of vicious legislation compose the far most onerous burthen on human beings, and one parchment roll may either make room for millions and provide for their comfortable subsistence, or it may spread disease, misery and death amongst a few scattered thousands. Under the existing state of legislation, and it is far from perfect, the plains of Missouri will soon swarm with an active popula-

tion, and the silks of Asia be imported to and worn on the banks of Columbia.

The preceding views are general, and exclude any reference to difference of caste. Hitherto the white caste possessed advantages which secured a small fraction more rapidity of increase over the coloured; the difference of moral condition is not likely to essentially change, and consequently, the relative numbers will remain not far from stationary. In a view so general as the present, it is unnecessary to make any distinction in the coloured caste, between those actually slaves, and those who are nominally free, as their degraded condition in the estimation of the whites, exposes the free coloured to all the worst evils of slavery, and so deeply cut and invariably placed is this mental mark of inferiority, that it operates as a seal of corruption on every face where African blood can be suspected. In the eye of reason such distinction is absurd, but we must write and even legislate upon human opinion as it is, and not upon what it is not.

There is another and a most momentous point of view, in which the population of the United States may be placed; that is, the certain change of the seat of power, by the motion of central force, from the Atlantic slope, into the central basin. By turning to table 15, page 254, it will be seen that the United States part of the Atlantic slope, amounts to 252,300 square miles, whilst tables 19 and 20, pages 295 and 297, will render it evident, that excluding the immense regions of Missouri, more than one million of square miles spreads in the central valley. With every rational deduction, the capabilities of the interior section to sustain population exceed that of the Atlantic slope as 4 to 1. How rapidly the political importance of the central valley is advancing, may be seen by the following:

No. LXXX.—Population of

Alabama	1810	000,000	1820	143,000
Arkansas	1810		1820	14,273
Illinois	1810	12,282	1820	55,211
Indiana	1810	24,520	1820	147,178
Kentucky	1810	406,511	1820	564,317
Louisiana	1810	76,556	1820	153,407
Michigan	1810	4,762	1820	10,000
Mississippi	1810	40,362	1820	75,448
Missouri	1810	20,845	1820	66,586
Ohio	1810	230,760	1820	581,434
Tennessee	1810	261,727	1820	422,813
		1,078,325		2,233,667

In this estimate, no notice is taken of western Virginia, Pennsylvania and New York, but restricted to whole organized states and territories, and embraces an area of about 745,000 square miles, or only a distributive population of 4 to the square mile. We have here, therefore, an immense space equal to the one fourth part of all Europe, on which men have only recently placed their residence, and where their dwellings are still few and scattered, but where numbers are doubling decennially. The existing population in the central basin amounts to at least 3,300,000, and whilst the entire numbers in the United States have increased in 38 years, from about 4 to 13 millions, the interior mass, has in a similar period, augmented from 100,000 to 3,300,000, demonstrating a powerful gravitating force westward.

When we carry into this analysis, the increased and increasing facility of intercommunication, the still prodigious disparity of relative density of population, and consequent cheapness of land in the west, we are fully warranted in assuming as a base of calculation, that the respective ratio of increase between the sections, will continue to maintain at least as great inequality as heretofore. On the pre-

ceding supposition, the central population would double every 10 years; but to be within bounds, table No. 81 is calculated on a ratio of 5 per cent per annum.

No. LXXXI.—*Population of the central basin.*

1826	3,000,000	1851	10,136,850
1827	3,150,000	1852	10,643,690
1828	3,307,500	1853	11,176,874
1829	3,472,855	1854	11,735,717
1830	3,646,495	1855	12,324,503
1831	3,828,815	1856	12,940,728
1832	4,020,255	1857	13,587,763
1833	4,221,265	1858	14,267,151
1834	4,432,325	1859	14,980,508
1835	4,653,940	1860	15,729,533
1836	4,886,645	1861	16,516,009
1837	5,130,975	1862	17,341,809
1838	5,387,520	1863	18,208,899
1839	5,656,895	1864	19,119,344
1840	5,939,715	1865	20,075,311
1841	6,236,700	1866	21,079,076
1842	6,548,535	1867	22,133,029
1843	6,875,960	1868	23,239,680
1844	7,219,755	1869	24,401,664
1845	7,580,740	1870	25,621,747
1846	7,959,775	1871	26,902,834
1847	8,357,760	1872	28,247,975
1848	8,775,645	1873	29,660,373
1849	9,194,425	1874	31,143,391
1850	9,654,145	1875	32,700,560

By reference to table 80, it will be seen that the aggregate population of the United States for 1870, is estimated at 47,368,544, and comparing that with the same epoch, in table 81, it is shown that a period of less than 45 years from the present time, is sufficient to give superior population to the central basin. In fact, the ratio used in table 81, is too low.

If the march of the emigrating column to the west is not arrested by unforeseen causes, the preponderance will be in the basin of the Mississippi in less than 40 years, or about 1865. And about that epoch, the relative density of population will be on the Atlantic slope, 90 to the square mile, and on the central basin 25. If every thing else is considered equal, the capabilities of farther increase after 1865 or 1870, will be as 9 to 2½, in favour of the central basin of North America over the Atlantic slope; and when each section is peopled in proportion to relative surface, the advantage of the central basin must have an excess, as 80 to 22 or 40 to 11.

In an elementary view of the United States, the first object of importance, after the numbers and distribution of the people, is certainly the means of intercommunication. Roads are more or less improved in all civilized countries, but it is in commercial and manufacturing countries, where roads and canals secure their due share of national importance. Roads and canals are, in a most emphatic manner, labour-saving machines, and it must be acknowledged that their creation and improvement in the United States, have progressed with a force, rapidity, and magnitude, fully commensurate with the increase of population. I cannot engage even to name all the great leading roads, or all the canals either completed, in progress of completion, or designed, but the following synopsis will serve to exhibit the vast and invaluable interest already created in the United States by canals and roads. In the former, however, ought always to be included, all improvements of any kind, tending to make the channels of rivers more navigable.

The canal system of the United States had its origin in Massachusetts, New Hampshire, and Connecticut. The peculiar structure of that section of the United States, has been noticed in the Physical section of this View. From such structure, the

coast, though abounding in harbours, and though the tides rose with augmented height, the rivers were, in their natural state, very unnavigable. To obviate this disadvantage, the rapid but fine streams of the Merrimac and Connecticut have been so far opened, by side cuts and locks, as to extend the navigation of their bosoms to almost their sources.

The most important haven of the eastern states, that of Boston, having no great river entering its recesses, a bold, and when designed, a sublime plan was made to unite the Merrimac basin to Boston harbour. This eventuated in the Middlesex canal, so called from the county of Massachusetts, through which it extends, 29½ miles from Boston to Chelmsford, and supplied by Concord river, with 136 feet of lockage. The Middlesex canal was the first on any considerable scale undertaken in the United States, and, besides its intrinsic importance to Massachusetts and New Hampshire, had great influence in promoting similar works elsewhere, but particularly the opening of side canals on the Merrimac river, thus making that stream in effect a continuation of the canal.

Blackstone river, one of the northern branches of Pawtucket river, rises in Worcester county, Massachusetts, and flowing SSE. into Rhode Island, afforded a canal route from the centre of Massachusetts to the city of Providence, which by the name of Blackstone canal, has been undertaken and is in progress. Length 45 miles from Worcester to Providence.

Next, westward from the basins of Merrimac and Boston, stretches the still more extensive navigable basin, the Connecticut. In its natural state, this fine river, like every other stream of that part of the United States, was greatly impeded by shoals and rapids, which have, however, been so far removed or obviated as to admit a boat navigation of 250 miles to Haverhill; ships of 7½ feet draught are na-

vigated 50 miles to Hartford, near the head of the tides.

Farmington canal, from Northampton, Massachusetts, to New Haven, by Westfield, Farmington, and Quinnipaug rivers, is a part of the Connecticut system of inland navigation; see page 162, and sequel. This canal is partly completed.

The most remarkable of the natural inlets of the United States, has become the theatre of its most extensive canal operations. In a state of nature, this singular tide river, the Hudson, presented at once an opening of one hundred and sixty miles directly into the continent, and directly towards another navigable and much more extensive basin, the St. Lawrence. Above the head of the tides, the Hudson divides into two great channels, one from the north, and another from the west. By the valley of the former, the most elevated table land into St. Lawrence was 90 feet, and by the latter or western branch, the Mohawk, only 420 into Lake Ontario. To any mind, even slightly disciplined to reflect on canal improvement, to trace the routes of the Erie and Champlain canals was a necessary operation, if made acquainted with the true geographical features of the state of New York. The fame of first suggesting these canals, will be perhaps disputed between Gouverneur Morris and De Witt Clinton, but their execution may be safely placed on the tombstone of the latter, nor could human nature demand a more sublime epitaph than "THE CHAMPLAIN AND ERIE CANALS."

By those two stupendous channels, upwards of 460 miles of artificial water lines have been given to the United States, and the two basins of the Hudson and St. Lawrence, connected at distant points, opening the commerce of the Canadian sea to the city of New York. The importance of these new national arteries will appear with more force, from the following comparative sketch:

The plan and execution of the two canals of New York, and perhaps still more, the plan and very near advance to completion of the Welland canal in Upper Canada, have arrested not alone the attention of the people of Canada and the United States, but of Europe, to the natural and artificial navigation of the sea of Canada.

The St. Lawrence or drain of that inland sea, is a river, or more correctly a strait, entirely peculiar to itself in America, and having but one counterpart, that of the Marmora Black sea, and sea of Azoph. To reach this fresh-water inland sea by a canal route, from the dawn of civilized settlement, engaged the mind of every man of deep reflection who traversed the intermediate space from the valley of the Hudson. The accomplishment of this daring design we have witnessed, by the opening of not one, but two chains of canal and river routes—The Erie canal entering above, and the Champlain below the great rock shelf of Niagara.

As far as the mere practicability of forming canals from the Hudson into the St. Lawrence basin is concerned, the dispute is at rest; but there are other very weighty considerations connected with this great section of commercial intercommunication which have never yet received due attention. The day is approaching by not slow advance when the free navigation of the St. Lawrence will be demanded by the people of the northwestern sections of the United States, and demanded in a voice which neither the United States nor British governments, will be able to disregard. However despotic or free in name, all governments are in fact the mere organs of public will, and when events or interests of sufficient magnitude, arouse any people to the discussion of their aggregate will, governments of whatever form must yield to moral and physical force combined. It is a question not yet decided, how far any nation having political authority over the territory

along the banks of a natural water channel, is authorised by the laws of either nature or nations, to bar its free use to other nations, particularly in cases where absolutely requisite to international communication. To answer this question in favour of the right of stoppage, would be to say that Denmark has a right to close the Baltic, and Turkey a similar right to deny a passage through the Dardanelles and Thracian Bosphorus; and without any very violent stretch of concession, would grant to France and Great Britain, the right to close by convention between themselves the British channel.

On the side of the United States, as early as 1827, two canals were in actual operation. Previous, however, to the completion of either, it became obvious to the authorities and people of the Canadas, that when open, the Erie canal, in particular, would divert an immense mass of produce from the St. Lawrence channel to New York. With a view to obviate consequences of such a revolution, and with still more enlightened and liberal views, the Canada Land Company projected, and have in great part executed the Welland canal. As this new chain of inland navigation is but little known in the United States, some descriptive detail is necessary.

Lakes Erie and Ontario are separated by a peninsula, extending with a length of 40 miles east and west, between the western extremity of the latter, and the south-eastern of the former, and with a mean width of 25 miles. Along the eastern border of this peninsula winds Niagara river, falling from lake to lake 334 feet. Three-fourths of the whole surface is a plain, in part marshy, and spreading northward from, and very little elevated above lake Erie. The plain is terminated about six miles from lake Ontario by that rock ledge over which the waters of lake Erie precipitate, and form that sublime natural curiosity, the falls of Niagara. Between the summit level and the southern shore of lake Onta-

rio, the ground falls rapidly, and leaves a narrow alluvial border along the lake, stretching from the mouth of Niagara river to Burlington bay.

Grand or Ouse river of Upper Canada rises at N. lat. 43° 40′, long. 3° 30′ W. from Washington, in the country of the Six Nations of Indians, and flowing thence south 70 miles, enters Haldimand county, and turning to S. E. winds by a very tortuous channel but sluggish current into lake Erie, which it enters 40 miles directly west from the outlet of that lake, after an entire comparative course of 100 miles. This stream in the lower part of its channel forms the southernmost termination to the peninsula we are describing.

Rising east from Grand river, at about 16 miles from lake Erie, the Welland or Chippewa river, flows by a general course to the eastward, and falls into Niagara river immediately above the rapids which precede the falls. Similar to Grand river, the Welland is a very sluggish stream. In reality as has been already noticed, the whole plain above the ridge is an almost dead flat, having in no direction sufficient inclination to admit any great velocity of current in the streams.

The Welland canal commences in Port Maitland at the mouth of Grand river, and follows the channel of that stream one and two-fifths of a mile, and thence up Broad creek seven-eighths of a mile. Here the artificial channel commences by a cut of 10 miles through Winfleet marsh. This extensive morass spreads between Grand and Welland rivers, elevated but from 10 to 16 feet above lake Erie. Entering Welland river and descending it 10 miles, the canal is then conducted through the summit ridge, by a stupendous deep cut, only equalled in America by the Desague near Mexico. The level of Welland river is preserved to lock No. 1, 4¼ miles from the deep cut. Thus far, steam boats, by either Welland or Grand rivers, are admitted. Approach-

ing the brow of the mountain ridge, another deep cut of one-fourth of a mile, leads to the tremendous brow, down which in a mile and 11-16ths, nearly the whole difference of level between Lake Erie and Ontario, is overcome by 17 locks of 100 by 22 feet. The locks westward of the mountain ridge are 125 by 40 feet. There are very few if any works of art yet constructed in America, more worthy of a visit than this precipice of locks which are placed along the declivity, winding from right to left, none nearer each other than 30 yards, in order to give room to intervening reservoirs. At the foot of this series, the canal is led along a ravine 2½ miles by 12 locks, to St. Catharine's, having descended from the summit level 322 feet. From the latter point to Lake Ontario 5 miles, the canal, by four locks, reaches its northern termination in Port Dalhousie.

If we consider the colonial condition of Canada, the thinness of population and limited resources of the people of that country, it is impossible to repress our admiration of the splendid design and prompt execution of this truly great work. It will, when completed, admit the passage of the largest vessels which can navigate Lake Erie, and it is expected to be opened late in the present or early in the ensuing year.

The Canada Land Company has the immortal honour of planning and forming this connecting link in their chain of water intercommunication between the upper and lower sub-basins of the St. Lawrence. Never has any work more effectually answered its purposes than will the Welland canal. The largest vessels that can navigate lake Erie, and enter its shallow ports, are generally about from 50 to 90 tons, with a breadth of beam of 20, and keel of 90 feet. The objects which were to be obtained by the formation of the Welland canal, have already been stated, but there are other advantages secured to its projectors, or possessors, which cannot be over-

looked, and one of the greatest arises from the prevailing winds on Lake Erie, and from the peculiar manner by which that lake *debouches* into Niagara river. The winds throughout the year blow so generally down the lake as to demand for a voyage from Buffaloe to Detroit, from three to four or five times as many days as the reverse passage. Lake Erie narrowing also at its north-eastern extremity, and Niagara river turning nearly at right angles to the general course of the lake, forms a gorge into which ice is driven by the never tiring westerly and north-westerly winds. From these combined causes, the outlet of the Welland canal will be open from one to two months annually longer than will that of the Erie canal from Buffaloe and Black Rock.

Without indulging an illiberal spirit of national rivalry, it is obvious that nature itself points out the necessity of obviating by artificial means the very defective navigation of Lake Erie. Except Detroit and Niagara rivers, no one of the shore harbours of Lake Erie, admits a safe and steady entrance of 7 feet; also along the United States' shore, extend long lines of rock, and on the Canada side equally extended and dangerous reefs of sand. To these unchangeable impediments in the earth, may be added the perennial currents of air, to doom the navigation of this sheet of water to eternal danger, and diminutive tonnage. "*Rivers were made to supply canals with water*," said Brindley, and never was the expression more applicable than along Lake Erie. The same streams which deny entrance to large vessels from the lake, would afford an abundant supply of water to a canal: never certainly did more circumstances combine to excite to the performance of any other undertaking, than does to that of encircling Lake Erie with a canal from Buffaloe to Detroit. It would more than complete the chain already in part executed in the Erie, and in progress in the Ohio canal; and the whole taken

together, constitute one of the most useful and extensive lines of natural and artificial navigation, not only in existence, but which the earth admits to be put into existence.

The following table of stationary distances will at once enable the reader to perceive the facilities which nature itself presents to the advancement of the proposed work.

Buffaloe harbour to Smoker's creek,	*Miles.* 4
Cayuga creek,	9— 13
Two Sisters creek,	6— 19
Cattaraugus creek,	9— 28
Dunkirk harbour,	13— 41
Fredonia creek,	1— 42
Portland mouth of Chatauque creek,	14— 56
Northern angle of Pennsylvania,	10— 66
Twenty Mile creek,	1— 67
Sixteen Mile creek,	6— 73
Twelve Mile creek,	5— 78
Erie town and harbour	8— 86
Fairview and mouth of Walnut creek,	5— 91
Elk Creek,	6— 97
Crooked creek,	5—102
Northwest angle of Pennsylvania,	4—106
Coneaught village and river,	1—107
Ashtabula village and river,	14—121
New Market and mouth of Grand river,	27—148
New Market Creek,	9—157
Cuyahoga river and town of Cleveland, where the Ohio canal debouches into Lake Erie	18—175
Rocky river,	6—181
Black river,	18—199
Beaver river,	4—203
Vermillion river,	5—208
Old Woman's creek,	10—218
Huron river,	3—221
Sandusky bay,	10—231
Portage river,	20—251
Toussaint river,	8—259

Maumee river, - - - - - -	15—274
Raisin river, - - - - - - -	9—283
Stoney creek, - - - - - - -	5—288
Huron river, - - - - - - -	10—298
Rouge river, - - - - - - - -	22—320
Detroit, - - - - - - - -	3—325

At the first view, it will no doubt to many persons appear extravagant, to propose bordering a navigable lake of above 300 miles in length, with a canal; but if a careful comparison is made between the safety and regularity of transportation by such a canal, and the very uncertain and tedious navigation of the lake, a decision would at once be made in favour of the former. The same canal boat which would be loaded in the Ohio or Hudson, could without transhipment, be conveyed to the opposite extreme.

The most remarkable circumstance, however, in such a canal, is that it could be carried upwards of 300 miles on one level, if such a mode should be requisite; and in any manner of construction, would demand less lockage and be more secure of an uninterrupted supply of water, than any other canal line of equal length which can be traced in the United States.

Beside the Cuyahoga and Ohio canal, several other navigable streams issue from Ohio and Michigan, and flow into Lake Erie, of which Vermillion, Huron of Ohio, Sandusky, Maumee, Raisin, Huron of Michigan, and Riviere Rouge are considerable volumes of water.

In the very rapid advance of population, the almost naturally continuous navigable line by the Wabash and Maumee, will come forward and obtrude itself on public notice, much sooner than any person would now dare to anticipate. A single glance on a map of that part of the United States, will render demonstrative, how completely the Wabash and

Maumee route would harmonize with the Ohio and Erie canals. But we must pause; the many national and individual benefits of the suggested improvements are so obvious, as to present themselves at once without a prompter.

The Welland canal is not, however, the only large artificial channel projected and in progress in Canada; the Rideau canal arrests great attention at present, not only in Canada but in Great Britain. The Rideau canal is intended to obviate the very difficult navigation of the St. Lawrence, above Montreal, and in time of war with the United States, to "obtain an inland route of communication between Upper and Lower Canada, not liable to interruption by a foreign enemy." The original design of this canal dates back to 1816, and proposed to commence at the mouth of Rideau river into the Ottawas, and thence following the course of the former until about 20 miles below the lake of the same name, and thence ascending a small stream called Irish creek, which passes through the township of Kitley, and in some places approaches within 18 miles of the St. Lawrence. After reaching the head of this stream, which in summer is almost dry, it was proposed to make a short cut across a neck of land into the Ganonanoqui waters in the town of Beverly, and then following that river to its outlet into Lake Ontario, or rather St. Lawrence river, 18 miles below Kingston. By table 15, page 256, it appears to be 173 miles from Kingston to Montreal; by the route of the Ottawas river and Rideau canal, the distance will be upwards of 200 miles, but by the latter will be avoided the dangerous rapids of St. Lawrence, and in the opinion it would seem of British politicians, the still more dangerous neighbourhood of the United States.

Apart from any national predilections, but regarding improvements, whether in Canada or the

United States, with respect to their effect on human happiness, and as forming connecting links in a great system of inland navigation, I have engrouped with the New York canals those of Welland and Rideau.

Besides the great lines, by pre-eminence called Erie and Champlain, several minor short, but nevertheless very important canals, are either actually completed or designed in New York.

Oswego canal, length 38 miles, is completed, uniting the Hudson and Erie canal with Lake Ontario, and extending from Salina to Oswego.

Seneca canal, which in a length of 20 miles connects the Seneca and Cayuga lakes with the Erie canal, following the united outlets of those two large lakes.

Delaware and Hudson canal, formed along the vallies of the Nevisink, Rondout, and Esopus rivers, unites these two rivers by a line drawn through Orange, Sullivan, and Ulster counties, New York. The course of this canal being in some respects peculiar, demands a more particular notice. Leaving the Delaware and following Nevisink and Bashes creeks about 20 miles, enters the valley of Rondout creek, which it pursues about 20 miles, and thence passes the intermediate neck of land into Esopus or Kingston creek, which it follows to the Hudson; it is completed and in operation; entire length 65 miles.

A second canal connexion between the Hudson and Delaware basins is now in progress by the Morris canal. The line of the Morris canal leaves the Delaware at Phillipsburgh, opposite Easton, in Pennsylvania, and carried over Warren county, New Jersey, to its extreme north-east angle about 30 miles; thence eastward through Morris and Essex counties to the Passaick river, and along the valley of the latter to Newark; leaves that city and crosses Passaick and Hackinsack, and winds through

the Bergen marshes to Jersey city, opposite New York.

The State of Pennsylvania in respect to navigable rivers is in a high degree advantageously situated, though none of the larger streams which wind over this state either rise or enter their recipients within its limits. Of these great commercial or navigable channels, or chains of channels, the Delaware on the east, Susquehanna in the centre, and Ohio on the west, claim precedence. The political boundaries of the state of Pennsylvania completely and obliquely traverse its river vallies, and have compelled the inhabitants to incur immense labour and expense to unite their natural water courses by artificial improvements. This expenditure of toil and money has been met, and, at this juncture, few, if any other states in the United States, have undertaken and executed more;—no other state has so extensive works in actual progress. The Lehigh river, above Easton, to Mauch Chunk or Lehigh coal mines, has been rendered navigable by dams and falling locks, executed by White and Hazard at the expense of the Lehigh coal and navigation company. A canal is now in progress from Easton down the Delaware to Bristol; length about 50 miles. The Schuylkill river has been completely canalled, from tide water at the city of Philadelphia to the extensive coal mines on its sources, upwards of 110 miles. To unite the Schuylkill navigation to that of Susquehanna the Union Canal has been constructed, following the vallies of Tulpehocken and Swatara creeks from Reading in Berks to Middletown in Dauphin county. The Union is a link in a chain, now in progress, by the Susquehanna, Juniata, and Alleghany rivers to the city of Pittsburg. Beside these immense lines, which traverse in connexion the entire state, there exists a small but important canal, to pass the rapids or Conewago falls at York Haven on the Susquehanna; the Conestogo canal of

18 miles, to open by that creek a navigable channel from the city of Lancaster to the Susquehanna river; and preparations are making to extend a rail road from the city of Philadelphia, by Lancaster, to Columbia on the Susquehanna.

The Chesapeake and Ohio canal properly connects with the Pennsylvania system, though leaving tide water at Washington city. If executed agreeable to the original design, it will traverse a very interesting section of Pennsylvania, and unite with the Pennsylvania canal at Pittsburg; and if the former should be continued to Lake Erie, the two channels forming a common centre at the junction of the Allegany and Monongahela, will render the city of Pittsburg a most important manufacturing and commercial emporium. But in the accelerated advance of canal improvement, another line of incalculable value will meet public attention. The Ohio river at some stages of water is a very safely navigable stream; but is annually in autumn rendered unnavigable from drought. This impediment continues with diminished extent as low as Louisville, and can be obviated only by a canal along the entire bank of the river, or by dams and flushes. The former infinitely most eligible mode will no doubt be ultimately adopted, and secure at once more safety and a steady conveyance at that season of the year when most necessary. My limits preclude detail on the subject of extending a canal line along the Ohio, but I am well convinced from what I know of that river, that such must be the use made of its water at no very distant day. The best commentary on this subject might find a text in the census tables inserted in this chapter.

The Susquehanna navigable basin connects New York, Pennsylvania, and Maryland, and a cross line of canals could be carried along its middle channel, from tide water in Chesapeake bay to the Erie canal, rising at the utmost height to 885 feet.

(See table 5, page 71.) The great features of this section of the United States have been so amply noticed under the head of physical geography, that little can be usefully added in this place.

The Susquehanna is followed by another lesser but very important river valley, the Potomac. The rise of a great emporium between these two streams presents an anomaly in the political geography of the northern part of the United States. Baltimore, with great accumulated wealth, is actively engaged to determine, I will boldly say, the most important question in political economy. The relative value, in a national point of view, between roads and canals, as means of commercial intercommunication, bids fair to meet a decisive comparison. If the Baltimore rail road succeeds, the indispensable benefits of a navigable river to a commercial city will be rendered at least very doubtful, and, in point of fact, the already rapid growth of Baltimore goes far to solve the problem. The Baltimore rail road and Chesapeake and Ohio canal have both been commenced. July 4th, 1828, is the date of the incipient beginning of those two great works.

With the valley of Potomac terminates the execution or even the undertaking of any very extensive canal improvement on the Atlantic slope advancing from north to south. If the reader will turn to the physical section of this view, he will find an ample notice of the radical change in the navigable facilities afforded by the Atlantic bays and rivers north and south from the Chesapeake. With James' river terminates the northern system, and beyond that stream to Florida we meet, with but few exceptions, wide and shallow sounds and rivers impeded by bars and shoals. The great sea-sand alluvial border widens, whilst the tides are greatly lessened in elevation. I wrote the following reflections on the advantages possessed by Virginia, should that state enter the list of those of her sister

states, the inhabitants of which are inclined to avail themselves of local resources.

In every country there is some leading object of pursuit, which impels, with more or less force, the acts of the people. This leading principle may be called the temper of a nation, and necessarily exerts a controlling power over all its acts. Where the people have a voice, however, it is they who act, and are acted on by this moral force. Internal improvement is at this time the object which evinces the paramount feeling of the people of this country. To meliorate their condition in every practicable manner that awakened ingenuity may point out, will henceforth mark and exalt the character of the people of the United States; but from the complex nature of the form of government, works of public utility will be undertaken and executed with unequal intelligence and energy, following the impulse given by local state politics.

New York and Virginia offer themselves as prominent examples, illustrative of the foregoing exposition. These two states, with very unequal internal features, possess in one respect, in a very remarkable manner, similar advantages, as connecting links between the great Atlantic harbours and the vast INTERIOR of North America; both have a territorial extension, which grasps the necessary extremes. The western border of one reaches the great Canadian sea, that of the latter is formed by the Ohio river. With such resemblance as to the facility, how vast has been the difference in positive execution of plans to render their respective advantages available? Few citizens of Virginia could, without regret, answer the interrogatory. From local position, from the obvious effect on the individual prosperity of the people, and on the importance of the state as a member of the confederacy, Virginia, in place of being behind New York and Pennsylvania, ought to have been the leading state of the Union, in

every great object of internal improvement. In many respects, the mouth of the Chesapeake bay is the best entrance on the coast of the United States. So far from being ever frozen, this immense commercial inlet is never impeded with ice.

In order to place the local advantages of Virginia in a clear light, the following tables have been calculated. Though absolute accuracy cannot be vouched for, yet the general results will serve to give views sufficiently correct of the relative elevation, extent, and distributive population of Virginia.

Summary Table of Virginia.

Sections.	Square Miles.	Whites.	Free Persons of Colour.	Slaves.	Total.	Pop. to sq. mile.
Eastern,	9,035	116,179	16,959	128,448	261,584	29
Middle,	27,737	350,672	17,968	280,024	648,664	23½
Western,	28,130	134,122	1,070	13,316	148,508	5
Amount,	64,892	601,973	35,997	421,888	1,058,756	16½

Alluvial, or Eastern Section of Virginia, composed of Accomac, Caroline, Charles City, Elizabeth City, Essex, Gloucester, Greenesville, Isle of Wight, James City, King and Queen, King George, King William, Lancaster, Mathews, Middlesex, Nansemond, New Kent, Norfolk, Northampton, Northumberland, Princess Anne, Prince George's, Prince William, Richmond, Southampton, Surry, Sussex, Warwick, Westmoreland and York counties.

Middle or Hilly Section of Virginia, Albemarle, Amelia, Amherst, Augusta, Bath, Bedford, Berkeley, Bottetourt, Brunswick, Buckingham, Campbell, Charlotte, Chesterfield, Culpeper, Cumberland, Dinwiddie, Fairfax, Fauquier, Fluvanna, Franklin, Frederick, Goochland, Halifax, Hampshire, Hanover, Hardy, Henrico, Henry, Jefferson, Loudoun,

Louisa, Lunenburg, Madison, Mecklenburg, Morgan, Nottoway, Nelson, Orange, Patrick, Pendleton, Pittsylvania, Prince Edward, Powhatan, Rockbridge, Rockingham, Shenandoah, Spottsylvania, and Stafford counties.

Western Section of Virginia, Brooke, Cabell, Grayson, Giles, Greenbrier, Harrison, Kanawha, Lee, Lewis, Mason, Monongalia, Monroe, Montgomery, Ohio, Nicholas, Preston, Pocahontas, Randolph, Russell, Scott, Tazewell, Tyler, Washington, Wood, and Wythe counties.

No. LXXXII.—*Table of the ascents and descents from tide-water in James' river to the mouth of the Great Kenhawa, by the route of Jamestown, Craig's creek, Sinking creek, and Great Kenhawa.*

	Miles.			Feet.	
Richmond, up James' river, to mouth of Craig's creek,....		200	Rises		925
Up Craig's creek to the mouth of John's Creek,..........	49	249	do.	345	1270
Highest spring tributary to Craig's creek,.............	$8\frac{1}{2}$	$257\frac{1}{2}$	do.	1228	2498
Lowest point on dividing ridge,	$0\frac{1}{4}$		do.	53	2551
Highest spring tributary to Sinking creek,............	$0\frac{1}{4}$	258	Falls	42	2509
Mouth of Sinking creek,.....	34	292	do.	924	1585
Down Great Kanawha to the mouth of Greenbriar river,	55	347	do.	392	1333
Bowyer's Ferry,.............	46	393	do.	403	930
Kanawha at the foot of the Great Falls,...............	21	414	do.	341	589
Ohio river at the mouth of the Great Kanawha,...........	94	508	do.	108	481

Let any citizen of Virginia cast his eye on the splendid map of his state, and range over its bays,

rivers and mountains, from Norfolk to the mouth of Great Kanawha, and what must be his reflections on not seeing traced even a great connecting road. Without intending any reproach to the people of Virginia, which would be at once uncandid and unjust, we may seek the stationary position of the state in other causes. The table given, shews the very unequal distribution of her population, and serves also to explain some, otherwise very intricate effects of its local politics; but Virginia has, like New York and Pennsylvania, a territorial extent, which renders her utterly independent of the confederacy in the performance of any great work, canal or road, to unite the Atlantic slope with the valley of Ohio. The two fine rivers, James and Kanawha, seem to flow in directions, and to have pierced the mountain chains in such a manner, as to remove what was beyond human force, and leave to the people of Virginia the sublime task of completing what nature left undone. The rivers have carried on an unceasing war with the apparently stable mountains, and worn them down to their base.

In a state possessing such a natural line, and such distinguished men as are now engaged in the work of internal improvement, the great natural line of James and Kanawha river, cannot always remain unimproved. It is a narrow and contracted view of canal or road creation, in such a country as that of the United States, to consider it of local interest. No canal or road, traversing any state, can have its resulting benefits confined to that particular political section. Such improvements are national, and if well constructed, they are permanent as the natural features themselves. If a line of canals, or a line of roads and canals, were therefore constructed from tide water in James river to the Ohio at the mouth of Great Kanawha, then would another chain be added to bind the east

to the west, and another ligament be created to strengthen the Union, and secure that compact, which, however they may differ as to its provisions, every citizen of the United States holds sacred.

The Delaware and Chesapeake canal, is in some respects the most important improvement of that kind attempted hitherto in the United States, and is one of the few canal routes which could not by any human means be traversed by a road to equal advantage. This canal, if made of adequate dimensions, must produce the most extensive national benefits, particularly in time of war. Had such a channel as this been open from 1812 to 1814 inclusive, it would have far more than saved the expense of its own construction. If made, however, with too slender capacity for sea vessels, it is a canal, which from local position, can hardly, as a commercial channel, be of equal utility with those stretching towards or into the great interior agricultural districts of the United States.

Beyond the Chesapeake bay, the Dismal Swamp canal, by a length of 23 miles unites the waters of James river to those of Albemarle sound. It is completed and admits vessels of 7 feet draught.

Roanoke river enters deeply into the continent, the tide ascends its channel 70 miles, but the navigable facilities above the tides are not in proportion to volume. Some advance has been made to remove impediments in its stream, but still the Roanoke is amongst the fine, but unimproved rivers of the United States.

Santee and Pedee, it has already been noticed, have ample volumes of water and debouche into the Atlantic Ocean near the same point. Both are shallow and impeded by bars near their mouths. A canal has been constructed from the Santee at Eutaw, to Cooper river, uniting the bason of Santee with Charleston harbour, distance from Charleston into Santee about 60 miles. It is in contemplation

to extend the Santee navigation to Columbia, and upwards in other branches of the basin.

Another canal system has been proposed, from the city of Savannah to the Alatamaha; but little has yet been effected in such undertakings south of the Santee basin. The projected cut across the peninsula of Florida, is amongst the canal systems of the southern part of the United States, certainly of most importance, but also remains a splendid design.

From this cursory survey of the Canals of the Atlantic Slope, we proceed to notice those actually undertaken in the great central basin. In the physical view of that section, I have already noticed the very remarkable facility of navigation from the natural streams, but the extension of settlement superinduced still more direct channels of intercommunication. The bold design and successful execution of the New York canals, excited emulation in Ohio, and the Erie and Sciota canal, or Ohio state canal of 306 miles, from Cleveland on lake Erie to the Ohio, at the mouth of Sciota, was surveyed and is now rapidly progressing, forming in fact, a continuation of the New York canal system.

Another great canal line is also in progress in the state of Ohio, stretching from Cincinnati to Lake Erie, by the Miami and Maumee rivers. Part of the Miami branch is completed between Cincinnati and Dayton.

A short, but very necessary canal to pass the Falls of the Ohio at Louisville, has been undertaken. This side cut about three miles in length, will obviate the greatest natural obstruction in the bed of the Ohio; and is progressing to near its completion.

Canals have been projected in various other points of the Ohio and Mississippi regions; the most important of which are, a canal to join lake Huron to Illinois river; a canal or line of canals to unite the Wabash navigation to the Ohio Miami canal; a

canal to pass the Muscle shoals in Tennessee; a canal to unite the Tennessee to the Mobile navigation, and the still more extended and necessary canal along the southern shore of Lake Erie.

I once heard the respectable Judge Rodney at Natchez, suggest the idea of an entire side cut along the western side of the Mississippi, from the mouth of the Ohio downwards. If steam boats had never been invented, the idea of this excellent man would deserve most serious attention, and with all the powers of the steam boat to overcome the current, the advance of population along the Mississippi, will no doubt eventuate in opening many of those natural, but obstructed channels which wind over the great alluvial plain from Missouri to Louisiana. The Arkansas, Red, and Wachitau rivers, are to unite, and an immense circuit down the Mississippi and up the two latter avoided; but I must desist from farther detail here and close this chapter with a survey of the mouth of the Mississippi.

The subjoined view of the Delta of the Mississippi, as forming a part of the great navigable system of the United States, was first published in the American Farmer, Vol. 10, Nos. 16 and 17.

It is somewhat singular, that amid the various projects of internal improvement, the greatest has been neglected—scarcely noticed—that is to deepen the bar of the Mississippi. At the first glance of such a proposal, it would appear a very impracticable design, but I measured the passes and sounded all the bars of the outlet of that mighty stream in 1813, and the following observations are founded on that measurement. Besides three or four of little consequence, the Mississippi has four main passes or outlets; these are, the west pass with about eight feet water; the south-west pass with twelve feet water; south pass with eight feet, and the south-east, or main pass with twelve feet water. These depths are given at ordinary tides,

It may, however, be observed, that the tides in the gulf of Mexico are small, not exceeding, if uninfluenced by winds, two and a half feet.

Within the bars, and in all its course, the Mississippi is a very narrow stream in proportion to its depth. As high as Donaldsonville, at the outlet of La Fourche, near 80 miles above New Orleans, the mid channel, at the lowest stage, is upwards of 100 feet in depth. This great depth gradually lessens to about seventy feet before New Orleans, but maintains soundings of upwards of thirty feet until within one mile from the main bar. The influence also, of the great interior inundation, is less and less apparent approaching the outlets, where the difference of rise and fall from the latter cause is very trivial.

The surface of the land between the passes is as level as that of the ocean, rising only above low, and covered by high tides. The soil, an alluvial admixture of sand and blue mud; forming, nevertheless, an extremely tenacious clay. The common idea that the component clay of the Mississippi yields easily to the action of water, is very unfounded in fact; on the contrary, few earths sustain aqueous action so powerfully. The current also of the river has entirely ceased before reaching the bars.

I have made these preliminary remarks, in order to prepare the reader for what is to follow. I made the survey already mentioned, by order of General James Wilkinson, and one object of the work was to ascertain whether a battery could be erected, from which point blank shot could be thrown into the main pass. The performance of the task convinced me fully of the practicability, utility and necessity of a double work; a work which would enable the government of the United States to deepen the channel and defend its entrance. Though apparently so very difficult, the buildings at Kronstadt at the mouth of the Neva, the Eddystone Lighthouse,

and many more, were still more difficult, dangerous and expensive in their execution.

No soil could be possibly found better adapted to the sinking and retention of piles. Quick-sand, there is none, nor rock to arrest the point of the piles. It would, consequently, be very easy comparatively to commence where the water was at any given depth, and drive a double column of piles, leaving an intermediate space for a channel of any desirable width, and afterwards dredge the mud into the gulf. To shew the ease with which the dredging part could be performed, it is only necessary to state one fact. On either of the two great passes, when you have the depth of twelve, it is upwards of thirty feet in one, and upwards of fifty feet in two cables length.

Like all original projects, ridicule will no doubt be the first reward of a design to deepen the channel of our greatest river, but convinced I am, that ships of any draught will, long before fifty years, be navigated to and from New Orleans.

With such an improvement in our inland navigation, even the canal over the isthmus of Delaware and Chesapeake cannot be compared. Geographically, the Mississippi basin extends from N. lat. 29° to 51°, and from 26′ to 36° west from Washington City, forming an immense navigable triangle. The base of this vast figure from the sources of the Allegany to those of Maria's river, 1700 miles; from the sources of Maria's river to the mouth of the Mississippi itself, 1600 miles; and 1600 miles from the mouth of the Mississippi to the sources of the Alleghany. Such, however, is the irregularity of its outline, from entering at salient angles, that it is only from the rhumbs on a good map, that its area can be estimated with any approximation to exactness. Measured in this manner the basin of the Mississippi amounts to 1,341,649 square miles. Of such an extent, the two vallies of Ohio, and of Mis-

sissippi proper, contain 400,000 square miles, of a most productive soil, on which population is advancing with unprecedented rapidity.

It is to be hoped that the people and the government of the United States will turn their attention to a subject of improvement involving so few local, but embracing universal interest, really not confined to the United States, but influencing less or more, the whole commercial world. The Mississippi is, in fact, the most important stream in the northern temperate zone of the earth, both in respect to soil and superficies, and when peopled, as it will be, by a most active, enterprising and free people, must, within the current century, sustain the greatest physical and moral force ever united on a single river.

Many and most unfounded errors prevail respecting the natural history of this mighty river, but none so much calculated to produce undue influence upon the projected improvement, than its having frequently deserted its bed. To remove that, and many other misconceptions on the physical features of that world of waters, we now proceed to a brief sketch of the Delta, laying it down as a postulate: *That the Mississippi can no more desert its bed, than can the Susquehanna, Delaware, Hudson, &c.*

The facts of the Mississippi overflowing its banks at extreme high water, and in having outlets so far as that of the Atchafalaya from the ultimate recipient, have led to the erroneous opinion, that the main volume could desert its bed. The general depth of the Mississippi I have given, and have also observed that the depth very gradually lessens below La Fourche; but the depth given, was that of the water itself at the lowest stage, and not that of the river's bed below the high bank. At Bringier's, fourteen miles below the La Fourche, and one hundred and eighty miles above the main pass, the bed of the Mississippi was carefully measured by Mr. Louis Bringier and myself, and found to be one hundred

and thirty one english feet. The particular place where exists the greatest depth of this vast volume, has, I believe, never been determined; but above the mouth of Red river it lessens, and at Natchez is about seventy or eighty feet. The width, even as high as the junction of the Mississippi and Missouri, to the divergence of the passes, about eight miles above the main or south-east pass, where not swelled by islands, is in a remarkable degree uniform, not varying sensibly from half an English mile.

Meliorating a natural but obstructed water course by removing impediments, is as necessary and as meritorious as opening a new channel.

There are few phenomena in nature more curious, or perhaps more misunderstood, than the obstructions called rafts, in the Red and Atchafalaya, and being designated by one term, are generally considered as specifically the same in both streams, which as we shall soon perceive is far from being a fact. When on the subject of the Mississippi, the Atchafalaya as an outlet, was noticed and discussed, but we now proceed to examine it as a continuation of Red river.

Red river is the true North American Nile, rising in New Mexico, at N. lat. 35° and lon. 27° W. from Washington city, augmented by numerous branches and flowing in very nearly an easterly direction, 300 miles to the 100th degree W. from the Royal Observatory at Greenwich, and 23 deg. 4 m. W. from Washington City, continuing east 400 miles, and forming a boundary between the United States and Texas. Red river enters Arkansas, and curving to the S. E. a few miles, and thence south, enters Louisiana, over which it winds by a general course of S. E., 200, but by a very winding channel of upwards of 300 miles.

Red river enters Louisiana near the north west angle of that state, by a single stream, but about 30 miles lower breaks into numerous branches, pre-

senting a most intricate maze of islands, inlets, channels, and lakes of every size, from one to thirty miles in length. This annually inundated tract lies in a direction of north west and south east, extending 60 miles, with a mean width of eight miles. Ascending, this raft region, as it is absurdly called, commences at Grand Ecor, 4 miles above Natchitoches, and has every appearance of having once been a lake, which has been gradually filled by alluvion, and what is peculiarly worthy of remark is, that as the ancient lake was disappearing, the earth by which it was obliterated, operated to form dams across the mouths of the small tributary rivers on each side, and by that means create new lakes. In this manner was formed, lake Bastineau, 40 miles long, and from one to three wide ; lake Bodeau 30 miles long, and from one to ten miles wide; two large lakes in the vicinity of the Cado village, Spanish lake in the vicinity of Natchitoches, and many more. These new lakes, and the remains of the still greater and more ancient lake, have a most powerful effect in checking the excess, but at the same time lengthens the duration, of the floods of Red river. This great tributary of the Delta, rather than of the Mississippi, is a much greater stream than is commonly believed. Having a comparative course of upwards of one thousand miles, and draining at least 150,000 square miles, Red river bears into Louisiana an immense body of water. The spring periodical overflow of this river, is usually in the months of February, March and April, but flowing from a southern and in a great part a prairie country, the evaporation of summer and autumn reduces its volume to a very small compass. At the latter period, the lakes and low grounds in a great part drain out, or their waters are evaporated, and in October and November immense spaces, which in February, March and April, were inundated from one to twenty feet, become meadows covered with a carpet of green and succulent herbage.

Thirty miles above its influx into the Mississippi, Red river receives its north-eastern and largest branch, the Ouachita. The latter rises between Red and Arkansas rivers, long. W. from W. C. 17°, and at N. lat. 34° 40′; flowing thence a little east of south 300 miles, but by a very tortuous channel, joins Red river. The general features of Ouachita, are very similar to the main stream, and in particular those of the lakes and adjacent swamps, which near the Ouachita are at like seasons filled and emptied, and along both rivers operate as real reservoirs.

The great inundated tract above Natchitoches, is not rendered difficult of navigation by rafts of timber, for few such do really exist in these "thousand streams," but from the very great intricacy of the channels. I had a very large pirogue constructed in a creek of Lake Bistineau, with which we navigated into and above Lake Bodeau, and with which I returned by Red river, by one of its outlets below Alexandria at the Rapids, and down Boeuf river to Lemelles landing near St. Landre Opelousas. At high water, barges of large tonnage are navigated through the Raft, and for several hundred miles above, into the recesses of Arkansas and Texas.

At the Grand Ecor above Natchitoches, and at the latter village, Red river once more breaks into separate channels, which never again entirely reunite. The main stream, however, falls over its lower rapid at Alexandria, and flowing thence by a channel more winding, if possible, than that of the Mississippi itself, the two rivers touch rather than unite, one and a half miles above the efflux of the Atchafalaya, at N. lat. 31° 1′. A moment's attention to the relative courses of Red and Atchafalaya rivers, renders the conclusion inevitable, that the latter is the continuation of the former. The banks of the two streams have a perfect resemblance to each other, and particularly in the colour of the

ochreous earth of which they are composed, and from which Red river derives its name. This reddish earth, prevalent along the Boeuf and Teche, demonstrates also the extensive agency once exercised by the waters of Red river, in places which they no longer reach.

It has been noticed, that the current of the Mississippi, was thrown from the points into the bends, and it must be evident that with the current, will floating timber be in like manner borne along the shores at the bottom of the bends.—Though only distant from each other 2508 yards, or not quite half a mile, a very salient point from the left shore protrudes into the Mississippi, between the mouth of Red river and the efflux of Atchafalaya. Red river comes in from the north; the Mississippi meets it from the east, and the united waters rapidly sweep to the southward, and south-eastward, throw out the Atchafalaya to the south-west, and thence assume an eastern course of 5 or 6 miles, forming a very narrow and pointed peninsula on the eastern side of the Mississippi.

When the spring floods are at their height, an enormous body of water pours into Atchafalaya, with overwhelming rapidity. The winding of the bend above, as I have already noticed, forces the current, and with it every floating substance it bears, directly into the Atchafalaya, down which the *debris* is carried in masses which would stagger human belief to admit as possible. In about 1774, as near as I could obtain correct information in Louisiana, a body of floating timber, large and compact enough to fill the channel of Atchafalaya, lodged in one of the very crooked bends of that stream. The first raft was quickly augmented by new accessions, and now for upwards of fifty years, has been annually supplied, and has entirely prevented the navigation of the Hoogly of Louisiana. The raft I am now noticing, is really such in the proper mean-

ing of the term; it is composed of trees lying in every direction, lodged and interlaced from bank to bank, and rising and falling with the water; but, at every stage of flood, completely gorging the channel from bank to bank. There are a few spots along the Atchafalaya shores, which are above annual submersion, and the immediate banks are every where more elevated than the adjacent country on both sides; but in general, the course of this outlet above and below the Teche, is through one vast annually submerged tract; a tract covered with a most dense forest, except where chequered with lakes, or lined by rivers. Though of very little consequence as a habitable surface, however, the Atchafalaya, if rendered navigable, would be of incalculable advantage, not alone to Opelousas and Attacapas, but to all Louisiana and the western states generally. To speak of nothing else, the immense stores of timber, particularly the invaluable cypress, which abound along and near its banks, now locked from human use, must continue so until the removal of the impediment it places in the way of navigation, and some preventive against its recurrence is effected. Opening the Atchafalaya would be to open the Courtableau, Teche, and Vermillion. The unequalled advantages which might, with moderate expenditure, be taken of the peculiar natural features of these latter streams, I have discussed; but there is another consideration of great weight, which should meet the attention of the people of Louisiana, and of the general government; that is, the increased value of landed property in the vicinity which would be the certain consequence of opening the Atchafalaya.

The raft or rather rafts, when I surveyed the Atchafalaya in 1808 and 1809, began at 26 miles from the outlet of that river, and continued downwards in broken fragments below the mouth of the Courtableau. These fragments are far from stationary;

I witnessed breaches and removal several times, and am convinced that if acquisitions were prevented, time itself would remove the obstruction. The entrance of timber from the Mississippi can be easily prevented, and art ought to proceed in advance of time in abstracting a nuisance, which if removed, ample remuneration would be as certain as the operation of the laws of nature. Taken together, the whole of the rafts extend about 10 miles, rising and falling, as already observed, with the water.—Ten miles is 17,600 yards; the mean width very near 220, with a depth of 3 yards. These elements would give $17,600 \times 220 \times 3 = 11,616,000$ cubic yards, very nearly equal 2,450,632 cubic cords.

In the first instance, to prevent the future discharge of floating timber into the Atchafalaya, piles could be driven into the bed of that river at its efflux, and a lock constructed to admit the passage of boats and rafts. In fact, turning the floating trees down the Mississippi, would be itself no trifling advantage. The inhabitants along the banks of that river, advancing towards New Orleans, very carefully collect the timber found upon the stream, and use it as fuel.

In respect to removing the masses already accumulated in the Atchafalaya, it has been shewn to rise and fall with the water; one consequence of which circumstance is, that when the river in autumn is very low, the rafts extend from high bank to high bank, in the form of a semi-ellipse; large bodies near the shores being then left dry, could in great part be consumed by fire. The residue might be removed by means of cranes, the labour, as a matter of course, becoming constantly less burthensome, as the incumbent body would be rendered less and less compact.

There have been many extremely idle tales related, and as idly believed, respecting the Atchafalaya rafts. I have heard it asserted even at Ope-

lousas, within from 15 to 20 miles of the place, that the timber was in many places so compact as to have assumed, with mud and trees, the appearance of solid land, and that it could be passed without knowing a river flowed beneath. I have carefully surveyed the rafts in all their length, and have passed over them in numerous places. By taking a circuitous route from tree to tree, and by exposing ourselves to considerable danger, and much severe labour, they can be passed; but I saw no one place where the passage could be made without traversing at least twice the direct distance from bank to bank. At very high water, indeed, the act of crossing these rafts must be either one of great urgency or of still greater rashness; it was an enterprise I never undertook except from necessity.

Detail on the subject of meliorating the navigable facilities of Louisiana might be enlarged to a volume, but the brevity of this view sets an impassable limit to a farther investigation of that topic at present, and I close with a few observations on one of the most important problems in the physical geography of the United States. The question has been discussed for ages, how to obviate or lessen the quantum of overflow in rivers having their estuaries by extensive alluvial deltas. The necessary elements for the solution of this problem, have been collected with most care, and digested with most skill, in the examples of the Rhine and Po, and more particularly the latter.

M. de Progny, sent to Italy by Napoleon, to examine the Po, recommended artificial drains, in preference to embankments; but the Italian engineers doubted the practical efficacy of drains, and though, as applied to the Mississippi, I formerly adopted the opinion of M. de Progny, I have, on examining the reasons given by Italian engineers, harboured doubts. These doubts arise from the fact, that the overflow is occasioned by the incumbent mass from

above; and that opening new or enlarging old channels below, only tend to augment the pressure and increase the velocity of the current. These effects arise from the unerring laws of hydrostatics; but although all the benefits promised by M. de Progny could not be realized, it by no means follows that manifest and great advantages would not follow from increasing the depth and width of the natural, or where practicable, making new outlets from the Mississippi.

The Atchafalaya is 110 yards wide, and leaves the Mississippi by an inclined plane of considerable declivity. This rapid descent gives a strong current for 4 or 5 miles; it would not be a very great undertaking to pile the shores and deepen the channel so as to admit a much larger volume from the Mississippi, and admit that volume to flow for a much longer period than does the present natural outlet; but unless the new discharge was so regulated as to confine the mass to as small or even a less body in a given time, the most ruinous consequences would ensue to the arable borders of the left bank of the Teche, by throwing an increased annual inundation into the basin of Atchafalaya.

Similar objections may be urged against any other drain, unless mitigated in quantity in a given period, and lengthened in time. With these restrictions, if the channels of any or all the outlets were deepened, water would of course enter from the main stream sooner, and continue to flow longer, in direct proportion to depth.

On a former occasion, I laid down the following laws as regulating the motion of water. Water moves with equal velocity, in equal times, on equally inclined planes, at equal depths.

The plane of descent, except immediately at the points of outlet, being in every part of Louisiana, very little inclined, causes the water to accumulate in the recesses distant from the streams, and to en-

croach on the farms in every case where the supply is unusually abundant. It is these local features and the laws by which water either moves or stands stagnant, which render the occurrence of a breach in the levees or embankments to the Mississippi and its outlets, so serious a calamity to the inhabitants where they take place. These breaches or *crevasses*, demonstrate the effect of abstracting water from the rivers, and ought to deter from any attempt at artificial drainage unless the quantum can be fully controlled and a recipient provided.

In any case of constructing or increasing natural drains, it must be evident from the principles laid down in this paper, that the higher they are formed above the final discharge, the more effective; but in respect to the Mississippi, the Atchafalaya is the highest point where any practicable design of that kind could be carried into effect. On the east side it is only 14 miles in measure to the high lands below Loftus Heights; and on the western, a chain of water courses extend towards Avoyelles, with banks as elevated as the highest overflow, and protruded to the bank of Atchafalaya, 5 miles below its outlets by the Bayou de Glaize. Therefore, all the water discharged by the Mississippi, and most of that of Red river above, is forced into the space between the eastern bluffs, near Loftus Heights, and the mouth of Bayou de Glaize; three-fourths of the intermediate distance, 20 miles, being occupied by one of those long curving bends of the Mississippi.

From the diversified climates from which the periodical floods of the Delta are supplied, the entire body can never reach Louisiana at the same period, and thus nature has protected that country from submersion, at the opening of every spring; and well it is, that those fertile plains are thus defended, as it certainly admits of very well founded doubt whether human power can do much more than has already been done by embankment, to control the

overwhelming volume of water which annually traverses Louisiana. As navigable channels, nevertheless, the human hand can effect the most lasting and invaluable revolutions, and in this age when the accomplishment of one great design is taken as an incentive to undertake, and a demonstration of the practicability of executing other plans still more magnificent, the rivers of Louisiana will not, cannot be neglected. Another half century will not pass until ships of the line of the largest class will anchor before New Orleans, and steam vessels pass where entangled masses of timber now secure the reign of desolation along the banks of Atchafalaya. Nor will another fifty years pass, until steam will be employed to render habitable by drainage, immense tracts along the Atlantic coast, and shores of the Mexican Gulf, which are at present abandoned to stagnation and neglect.

As many persons who may read this View, it is probable will not possess means of comparison between the expense and utility of canals, I have subjoined a table which affords the most encouraging data.

Canal Stocks in England.

We have met, in a late number of Niles' Register, with the following table, showing the value of canal stocks in England. It is extracted by the Register from the Trade List of the 11th March last. The Trade List, it is said, is published weekly by an assistant clerk of the bills of entry of the British customs, and may be deemed to have an official sanction.

Names of Canals.	Original cost of each share.	Present price of each share.	Price of each share in 1822.	Dividend on each share.	Dividend in 1822.	No. of shares.	Average cost.
	l.	*l.*	*l.*	*l.* *s.*	*l.*		*l.* *s.*
Barnesley	160	300		13		5720	
Birmingham	$17\frac{1}{2}$	203	565	12 10	20	4000	
Carlisle	50	490				1600	21 10
Chesterfield	100	150	120	8	8	1500	
Coventry	100	1200	999	44	44	500	
Cromford	100	400		19		460	
Derby	100	150		7 10		600	110
Erwash	100	1400	1000	72	58	231	
Forth and Clyde	100	570		25		1207	406 16
Glamorganshire	100	250		13 12		600	172 13
Grand Junction	100	307	218	13	9	11600	
Grantham	150	215		9		749	150
Leeds and Liverpool	100	395	278	16	10	2897	
Leicester	100	325	260	17	10	540	140
Loughboro'	100	4000	2400	200	119	70	142 17
Milton Mowbray	100	240	170	11	$8\frac{1}{2}$	250	
Mersey & Erwell	100	825	650	35	30	500	

TABLE CONTINUED.

Names of Canals.	Original cost of each share.	Present price of each share.	Price of each share in 1822.	Dividend on each share.		Dividend in 1822.	No. of shares.	Average cost.	
	l.	*l.*	*l.*	*l.*	*s.*	*l.*		*l.*	*s.*
Monmouthshire	100	225		10			2409	100	
Neath	100	350		15			247	107	10
Nottingham	150	290		12			500		
Oxford	100	670	640	32		32	1786		
Shrewsbury	125	210		10			500		
Shropshire	125	135		7			500		
Somerset coal	50	170		10			800		
Stafford and Worcester	140	800	642	40		40	700	140	
Stourbridge	145	220		12			300		
Stroudwater	150	450		23			200		
Swansea	100	280		12	10		533		
Trent & Mersey	100	820	900	37	10	75	1300		
Warwick and Birmingham	100	265	210	12		11	1000		
Warwick and Napton	100	205	235	12		10	930		
Wyrley & Essington	125	160		6			800		

At a time when the subject of canals engages so much of the public attention in this country, the foregoing statement cannot but be interesting and encouraging. The value of canal stock, wherever the work may be, must depend on the tolls that they are allowed to charge, and on their having full employment. The canals which are constructing have a right to exact as high tolls, we are informed,

as are taken on the English canals; and there seems to be no doubt that the inexhaustible body of coal with which most of our canals are connected, and the great supply of that article which is required, for the transportation of coal alone, independent of other articles, will afford the canals full employment. Why then should not our canals be as valuable as those of Great Britain?—one of which, the Loughborough, it will be seen by the above table, is at four thousand per cent. and has risen sixteen hundred per cent. within the last six years.

In closing this much too brief notice of inland navigation in the United States, I cannot avoid observing, that history affords no other example of works on roads and canals being carried on to such extent as is done at this moment in the United States and Canada. Let such spirit prevail for one century, and what a decorated garden will North America present.

CHAPTER XII.

INDIVIDUAL STATES AND TERRITORIES OF THE UNITED STATES.

The reader will observe, that the chief town annexed to each county, is at once the seat of justice and principal post office for that county.

[The italic letters annexed to counties, shew their situation in the state to which they respectively belong: *e*, *w*, *n*, *s*, and *m*, eastward, westward, northward, southward, and middle.]

Many arbitrary subdivisions have been attempted, with a view to simplify the engrouping of the United States, but have appeared to me in every instance productive of confusion. The artificial lines of the political subdivisions, are drawn with so little regard to natural features, that all relative classification into eastern, western, southern or central states, superinduce so many exceptions, as to render the rule worse than dubious. In the subsequent specific description, I have adopted the alphabetic mode, as easy of reference and as obviating all attempts at an arrangement which I have shewn to be impracticable, so as to answer any useful purpose.

ALABAMA.

Boundaries, extent and position.—S. by Florida; S. W. by the Gulf of Mexico; W. by the state of Mississippi; N. by Tennessee, and E. by Georgia.

The limits of Alabama are:

	Miles.
Beginning on the Gulf of Mexico, between the mouths of Mobile and Pascagoula rivers, and thence northerly along the state of Mississippi,	320

To Tennessee river, thence down that stream,	10
To the southern boundary of Tennessee, thence due east along Tennessee,	153
To the N. W. angle of Georgia, thence along the western boundary of Georgia,*	146
To the Chatahooche river, thence down that stream to N. lat. 31°, by comparative courses,	160
To Perdido river,	150
Thence down the latter to its entrance into the Gulf of Mexico,	60
Westward along the Gulf of Mexico,	60
	1059

Area 51,770 square miles, 33,132,800 statute acres. Mean length 336; mean breadth from E. to W. 195 miles. Lying between lat. 30° 10′ and 35° N., and between long. 80° 05′ and 11° 30′ W. Seat of Government, Tuscaloosa, N. lat. 33° 13′, W. lon. 10° 41′.

Natural Geography. Alabama is naturally divided into three very distinct zones; the northern traversed by the main volume, and drained by numerous small rivers flowing into Tennessee, may be considered if not mountainous, at least very broken, and most pleasantly diversified. The middle or central zone, drained by the various branches of Coosa, Cahawba, Tuscaloosa and Tombigbee rivers, gradually assumes a more level surface and in general a very inferior soil to the northern section on Tennessee. The southern or Pine region is still less broken by hills than the central, and contracted by the western projection of Florida, to a strip of 60 miles wide, along Mobile bay, terminates in the sandy alluvion of the Mexican Gulf.

* The line of demarcation separating Alabama and Georgia, between the south line of Tennessee and Chatahooche river, is unsettled; the point of outset from the Chatahooche, being in dispute between the two states concerned; Alabama claiming Fort Mitchel, and Georgia the most western bend of Chatahooche, as the point of outset. The line mentioned in the text, is that recently extended by Georgia, and measures 145¾ miles.

Extending over almost 5 degrees of latitude, and rising from the level of the sea on the south, to considerable elevation, perhaps 1000 feet north, this state exhibits a marked difference of temperature. It touches rather than enters the region of sugar cane, but admits in all its extent of the profitable cultivation of cotton. Fruits, from the fig to the apple, flourish abundantly, but even the southern section does not admit the successful production of the orange. Small grain is cultivated, though maize predominates as a crop. Cotton is the staple of the state, but might be superseded by tobacco or indigo, perhaps by other vegetables.

Alabama has been too recently settled by civilized population, to admit the full development of metallic wealth, nor, except iron, do the known specimens of ores promise great fossil abundance.

The climate is mild, indeed might be with safety called delightful. Much of the soil is fertile, none utterly barren. In navigable rivers, this state possesses great commercial advantages, though comprising only one direct outlet to the sea. Besides many of less note, Alabama is watered by Tennessee, Tombigbee, Tuscaloosa, Alabama, Cahawba, Coosa, Talapoosa and Conecuh rivers.

Politically this state is divided into the following counties.

Counties.	*Chief Towns.*	*Pop.* 1820.
Autauga, *m.*	Washington	3853
Baldwin, *s. w.*	Blakely	1713
Bibb, *m.*	Centreville	3676
Blount, *m. n.*	Blountsville	2415
Butler, *s.*	Greenville	1405
Clark, *s. w.*	Clarksville	5839
Conecuh, *s.*	Sparta	5713
Covington, *s.*	Montezuma	
Dale, *s. e.*	Richmond	
Dallas, *m.*	Cahawba	6003
Decatur, *m.*	Woodville	
Fayette, *m. n.*	Fayette	
Franklin, *n. w.*	Russellville	4554
Green, *w.*	Erie	4988

Henry, *s. e.*	Columbia	2638
Jackson, *n. w.*	Bellefonte	8751
Jefferson, *w. n.*	Elyton	
Lauderdale, *n. w.*	Florence	4963
Lawrence, *n. w.*	Moulton	
Limestone, *n.*	Athens	9871
Madison, *n.*	Huntsville	17481
Marengo, *w. s.*	Lynden	2933
Marion, *w. n.*	Pikeville	
Mobile, *s. w.*	Mobile	2762
Monroe, *s. w.*	Claiborne	8838
Montgomery, *w. s.*	Montgomery	6604
Morgan, *n.*	Somerville	5263
Perry, *m.*	Marion	
Pickens, *w.*	Pickens	
Pike, *e. s.*	Liberty	
St. Clair, *w. n.*	Ashville	4166
Shelby, *w.*	Montevallo	2416
Tuscaloosa, *m. w.*	Tuscaloosa	8229
Walker, *m.*	Walker C. H.	
Washington, *w. s.*	St. Stephens	
Wilcox, *m. s.*	Canton	2917

The census of Alabama by the Marshall's return, was so very defective, that by subsequent information laid before Congress, a deficit of upwards of 16,000 was shewn; consequently the state in 1820 actually contained 143,000 inhabitants. The number at this epoch, 1820, no doubt exceeds 250,000.

ARKANSAS TERRITORY.

Boundaries, extent and position.—This extensive region is bounded by the state of Missouri N., the Mississippi river E., Louisiana S., Texas S. W. and W., and the western territory of the United States N. W.

	Miles.
Beginning on the right bank of the Mississippi river at N. lat. 36½° opposite the N. W. angle of Tennessee, thence down the Mississippi river, opposite Tennessee, by comparative courses,	170

Continuing down the Mississippi, opposite the state of Mississippi to the Northern boundary of Louisiana, on N. lat. 33°.	190
Thence due west along northern boundary of Louisiana,	170
From the N. W. angle of Louisiana to the S. W. angle of Missouri, the limits of Arkansas, as laid down on our maps, follow and form the boundary between the United States and Texas, to lon. 100° W. of Greenwich, thence due N. to N. lat. 36½°, and thence due east to the S. W. angle of Missouri, the three latter courses taken together, about	800
Thence continuing due E. to the right bank of St. Francis river, and along S. boundary of Missouri,	266
Down St. Francis to N. lat. 36°	50
Thence E. to the place of beginning,	34
Having an entire outline of	1320

Extending geographically, from N. lat. 33° to N. lat. 36½°, and in lon. from 12° 44′ to 23° 05′ W.

Greatest length from the Mississippi river along lat. 36°, 550 miles; mean breadth 220; area 121,340 square miles.

Natural Geography.—Arkansas is naturally divided into three sections; the eastern or alluvial, towards the Mississippi river; the central or mountainous, broken by the Maserne system; and the western or prairie. The eastern or alluvial section derives its name rather than character, from the alluvion of the Mississippi. Proceeding westward from that stream, an unbroken plain covered with a dense forest, is succeeded by a very gradual ascent partially forest and partially prairie, rising into hills of increasing elevation, advancing westward.

An humble, though distinct chain of mountains rises in Missouri, and stretching southwest over Arkansas, terminates in Texas, towards the Rio

del Norte. This chain is the Osark of Major Long, and the Maserne of Darby's Louisiana. Both terms are corruptions; Ozark is the provincial vulgarism for Arkansas, and Maserne is Mount Cerne disguised.

The western interior and prairie section of Arkansas, as extensive if not more so than both the preceding, is properly the commencement of that ocean of grass which spreads from the forests of the Mississippi to the summits of the Chippewayan. From these grassy plains issue those numerous confluents which by their union, form the great volume of the Arkansas. The Canadian river itself, a considerable stream, formed by three branches, unites with the Arkansas proper at the western foot of the Maserne mountains, and together forms the second largest constituent branch of the Mississippi. Breaking through the opposing mountains, the Arkansas rolls its now accumulated mass towards the Mississippi, but in a comparative course of 300 miles receives no farther accession of water beyond the size of a large creek.

White and St. Francis rivers rise in Missouri, and flowing southward, enter Arkansas, which they traverse in a nearly parallel direction, about 50 miles asunder, the former joining its recipient but a few miles above the mouth of the latter.

Washita river rises in southern Arkansas amid the rugged vallies of the Maserne, and draining the angle between Red, Arkansas and Mississippi, assumes a southern course and enters Louisiana.

Red river forming for upwards of 400 miles the southwestern boundary of Arkansas, like the Washita enters Louisiana, and opens central Arkansas to a direct communication with New Orleans.

The general features of this extensive region are too defectively explored to admit minute notice, much less detailed description. The Maserne tract is supposed to be in a high degree prolific in miner-

al treasures, in fact the lower lead mines of Missouri, at and around Potosi, belong to this region. Muriate of Soda (common salt,) so much abounds in the western plains, as to render impotable the waters of Arkansas.

Political features.—That part of Arkansas yet organised into counties, extends over about 70,000 square miles, stretching from the Mississippi river between Louisiana and Missouri. The settlements yet made are principally on the streams, and in great part on Arkansas and White rivers. The seat of government is at Little Rock on the right bank of Arkansas, at N. lat. 34° 43′, lon. 15° 15′ W. and by comparative courses about 120 miles above the discharge of that stream into the Mississippi.

For political purposes, Arkansas is subdivided into the following counties:

Counties.	*Chief Towns.*	*Pop.* 1820.
Arkansas, *s. e.*	**Arkansas**	**1260**
Chicot, *s. e.*	**Villemont**	
Clark, *m. s.*	**Clark C. H.**	**1040**
Conway, *m. e.*	**Marion**	
Crawford, *m.*	**Crawford C. H.**	
Crittenden, *e. n.*	**Greenock**	
Hampstead, *s.*	**Washington**	**2248**
Independence, *n. e.*	**Batesville**	
Izard, *n.*	**Izard C. H.**	
Lafayette, *s.*	**Lost Prairie**	
Laurence, *n. e.*	**Davidsonville**	**5602**
Lovely, *m. n.*	**Nicksville**	
Miller, *s.* **on Red riv.**	**Miller C. H.**	**999**
Philips, *e.* **on St. Fran.**	**Helena**	**1201**
Puslaske, *n. e.*	**Little Rock**	**1923**
Total		14,273

Of the preceding aggregate, 12,579 were whites; 59 free coloured; 1618 slaves; all others 18. Sup-

posed increase since 1820, at 5 per cent per annum,

1821—14,986	1825—18,227
1822—15,736	1826—19,137
1823—16,523	1827—20,095
1824—17,360	1828—21,100

The real existing population, however, no doubt considerably exceeds the result of this estimate.

History.—Arkansas was discovered and settled by the French, under the Chevalier de Tonti, as early as 1685. In the various transfers of territory, it followed the fate of other parts of Louisiana, until February 1819, when by a law of Congress, that part of Louisiana between the state of Louisiana or N. lat. 33°, and the southern boundary of Missouri, was erected into a separate territorial government, and continues such to the present epoch.

CONNECTICUT.

Boundaries.—Long Island sound S., New York W., Massachusetts N., and Rhode Island E.

	Miles.
Having a boundary along the sound,	95
Along New York,	80
East along Massachusetts,	85
Thence with Rhode Island to Long Island sound,	50
Outline,	310

Length from E. to W. 85, mean width 60 miles, and area 5050 square miles, extending from 40° 59′ to 42° 02′ N., and in lon. from 4° 18′ to 5° 12′ E.

Natural Geography.—Though generally hilly and in part mountainous, no part of Connecticut rises to great elevation above the level of the ocean. The sea border of this state is in a peculiar manner indented by fine harbors, of which New London, New Haven, Bridgeport and Norwich are only the principal. The state is drained by the Houssatonick

and Thames, and traversed by Connecticut river. The face of the country is most pleasingly varied by hill, mountain, dale and plains, which decorated by cultivation, gives a seductive aspect to Connecticut. The narrow limits geographically, and the little difference of elevation of parts in Connecticut, preclude much diversity of climate, yet there is a difference in the seasons sufficiently marked, between the southern border on the sound, and the interior towards Massachusetts.

The productions of Connecticut, are similar to other of the middle Atlantic states. Grain and fruit abound, but objects of manufacturing industry bid fair to become the paramount staples of this active state.

Political Geography.—Hartford in Hartford county, and on the left bank of Connecticut river, is the capital, if not the largest city in the state, though four others are incorporated as cities, New Haven, New London, Middletown and Norwich, and the whole state is decorated with neat and flourishing villages, many with the aspect of cities. Hartford stands near the centre of the state at N. lat. 41° 46′, lon. 4° 22′ E. Pop. 1820, 4726.

Counties.	*Chief Towns.*	*Pop.* 1820.
Hartford, *n.*	Hartford	47,264
Fairfield, *s. w.*	Fairfield	42,734
Litchfield, *n. w.*	Litchfield	41,267
Middlesex, *s.*	Middletown	22,401
New Haven, *s.*	New Haven	39,616
New London, *s. e.*	New London	35,943
Tolland, *n.*	Tolland	14,330
Windham, *n. e.*	Brooklyn	31,684
Total,		275,239

Classified population in 1810.

Free white males,	126,373
do. females,	128,806
Free coloured persons,	6,453
Slaves,	310
Total in 1810,	261,942

Population in 1820.

Free white males,	130,807
do. females,	136,374
Total whites	267,181
Free persons of colour, males,	3,863
do. females,	4,007
Slaves,	97
All other persons,	100
Total in 1820,	275,248
Of these, engaged in Agriculture,	50,518
do. Manufactures,	17,541
do. Commerce,	3,581

History.—First settlement 1634, by two colonies, Connecticut and New Haven, which were united in 1662, under the former name. This state has in uninterrupted prosperity followed the fate of her sister states, and most fortunately has few events in her progress to swell that volume of recorded calamity, human history.

Yale College at New Haven, founded 1701, deserves much better to be noticed, than those events usually spread over the pages of historical record. This seminary is of the first order, but is not the only establishment of learning at New Haven. A Theological Seminary was formed there in 1820. The Deaf and Dumb Asylum at Hartford, was the first institution of that species in America; it was founded 1817.

DISTRICT OF COLUMBIA.

Boundaries.—S. E., N. E., and N. W. by Maryland, and W. and S. W. by Virginia. This tract was laid out inclining 45° from the meridians, 10 miles each way, containing 100 square miles.

The Capitol in Washington, and the first meridian used in this View, stands at 39° 53′ 30″ N. lat., and from the most approved observations 76° 55′ 30″ W. of the Royal Observatory, Greenwich.

Natural Geography.—Potomac river meets the Atlantic tides at Georgetown, and traverses the District in a direction nearly south-east, receiving a small but important confluent, the Eastern Branch. The latter, rising about 20 miles north from Washington, enters the north-east side of the District, dilates into a wide bay, and joining the Potomac forms a most spacious harbour, with adequate depth for the largest vessels. The City of Washington extends over the peninsula, between the two branches.

The general surface of the District is waving rather than hilly, with a thin sandy soil. The particular site of Washington is in a high degree pleasing, giving by the wide sweep of the hills an idea of vastness to the scene. Rock creek entering from the north, near the north-west angle of the District, and entering Potomac, separates Georgetown from Washington. The former, seated on the point between Rock creek and Potomac, occupies a rather rapid acclivity from both streams, and presents in its bold front a complete contrast to Washington and Alexandria.

Political Geography. The District of Columbia, as it was afterwards located, was ceded to the United States by Virginia and Maryland, under an express provision of the Constitution of the United States. The acceptance, by act of Congress, took place July 16th, 1790, and the foundation of the

Capitol laid, in the presence of General Washington, September 16th, 1793. Congress first convened there December 1800.

The City of Washington, inconvenient as it is in respect to public business, has grown with considerable rapidity, and bids fair to receive from the Potomac canal such an acceleration as to place it, in a brief period, amongst the great emporia of the United States. Its conflagration, in 1814, independent of local advantages, has fixed the seat of the General Government, by exciting the just and ever-during indignant feelings of a brave and free people. The Gauls burnt Rome, and the Gauls sunk under and for many ages submitted to Roman power.

Alexandria stands on the right bank of the Potomac, very nearly 7 miles south from the Capitol. It is laid out at right angles very nearly with the course of the river in front, and the streets at right angles to each other.

Georgetown is similar to Alexandria, laid out at right angles, but the main transverse streets of the former conform to those of Washington.

Population of the three cities in 1820:

Washington - -	13,322
Alexandria - - -	8,218
Georgetown - -	7,360
Aggregate - - -	28,900

The Columbian Institute in Washington, and the Roman Catholic College, or rather University, in Georgetown, are the only seminaries on a large scale in the District; both are in active operation.

The government of the District of Columbia is a non-descript; it is subject to the immediate and exclusive legislation of the Federal Government, yet by act of Congress, February 27th, 1801, the laws of the two states from which it was taken remain in

force, in the respective parts taken from each. The Virginia part comprises the county of Alexandria, and the Maryland part the county of Washington.

Population of the different parts in 1820.

	Whites.	Free Coloured.	Slaves.	Amount.
Washington City	9607	1696	1944	13,247
Georgetown	4940	894	1526	7,360
Washington county	1512	168	1049	2,729
Alexandria	5615	1168	1435	8,218
Do. county	941	122	422	1,485
	22,615	4048	6376	33,039

Distributive Population in 1820.

Free Whites, males - - - -	11171
Do. females - - -	11443
	22614
Free Coloured, males - - - -	1731
Do. females - - - -	2317
Slaves, males - - - - -	3007
Do. females - - - - -	3370
Total - - - -	33,039
Of these engaged in Agriculture -	853
Do. Manufactures - -	2184
Do. Commerce -	512

History.—The brief history of the District of Columbia has been in great part anticipated, under the head of Political Geography, but the commencement, on July 4th, of the Chesapeake and Ohio Canal, is too important an event to be unnoticed in a View, however brief. In any respect, whether we regard its advance as enhancing the prosperity of the seat of general legislation; as adding one great link more to the chain of intercommunication; or as a display of youthful national vigour, this great

work is of the very first importance. Its progress will be regarded with deep interest by, I might be permitted to say, the civilized world.

DELAWARE.

Boundaries, extent, and position.—S. and W. by Maryland, N. by Pennsylvania, E. by Delaware bay, and S. E. by the Atlantic ocean.

	Miles.
Beginning on the Atlantic ocean at Fenwick's island, thence west along Maryland -	36
Thence northward, along Maryland, to the commencement of the semicircle around New Castle - - - - - -	87
Along the semicircle and Pennsylvania to the Delaware river - - -	26
Thence down Delaware bay to Cape Henlopen	90
Thence along the Atlantic ocean to Fenwick's island - - - - - -	20
Having an entire outline of - -	259

Length 100, mean width 21, and area 2100 square miles, extending from lat. 38° 27′ to 39° 50′ N.

Natural Features. Delaware is the second smallest state of the United States, and the least diversified in surface. The more northern part is hilly and waving, but gradually becomes more monotonous advancing towards the Atlantic ocean. The actual dividing line between the waters of Delaware and Chesapeake bay is in Delaware, but so far from being a ridge is mostly an extended flat, from which the Pocomoke, Nanticoke, Choptank, Chester, and Sassafras rivers ooze, rather than flow, into Chesapeake bay; and a number of unimportant creeks flow into the Delaware. The soil, in some places excellent, is generally thin, and in many places marshy. The climate more distinctly different, at the extremes, than could be expected from

a difference of latitude of only 1° 23′, and no considerable difference of level. Fruits are abundant, grain and meadow-grass the general objects of agricultural pursuit. From the mean annual temperature of Baltimore, it is evident cotton might be made a staple crop of Delaware, and the eastern shore of Maryland. Wherever there is 140 days without frost, cotton will fully ripen, and produce sufficiently for profitable cultivation. But little metallic wealth can be expected in a region so approaching to recent alluvion as Delaware.

Political Geography.

Counties.	*Chief towns.*	*Pop.* 1820.
Kent, *m.*	DOVER	20,793
New Castle, *n.*	New Castle and Wilmington	27,899
Sussex, *s.*	Georgetown	24,057
		72,749

Progressive Population.

1787—37,000	1800—64,273
1790—59,094	1810—72,674

History.—Delaware was peopled by the Swedes and Fins as early as 1627. The colony was formed under the auspices of Gustavus Adolphus, King of Sweden, who named the country Nova Suecia. Hoarkill, now Lewistown, was founded 1630, but the Dutch claiming the country it passed under their power in 1655. In 1664, the colony on the Delaware fell, with other parts of New Amsterdam, into the hands of the English, and was granted by Charles II. to his brother James Duke of York, who, in 1682, conveyed it, as far as Cape Henlopen, to William Penn. In 1704, Delaware, though under the same proprietor, became a separate colonial establishment, and remained such until the revolution. Constitution formed 1776.

The very important Chesapeake and Delaware canal crosses this state, and in its creation forms one

of the most remarkable periods of its history. As a manufacturing state, Delaware holds a rank far above its relative extent and population. The works near Wilmington are extensive and highly valuable. As early as 1810, the value of the various manufactures exceeded $1,733,000.

FLORIDA.

Boundaries, extent, and position.—Florida has the Atlantic ocean E., Florida channel S., the Gulf of Mexico S. W., Alabama W. and N. W., and Georgia N.

	Miles.
Commencing at the mouth of St. Mary's river, and thence along the Atlantic ocean to Florida point - - - -	450
Upon the Gulf of Mexico, from Florida point to the Perdido river - - -	600
Up Perdido bay and river to N. lat. 31°	60
Thence east along N. lat. 31°, and the south boundary of Alabama, to Chatahooche river	150
Down Chatahooche to the influx of Flint river	25
Thence eastward to the head of St. Mary's river	150
Down St. Mary's to its mouth - -	80
Entire outline - - - -	1515

Following a curve line along the peninsula, from Florida point, and continuing to Perdido river at N. lat. 31°, the length of Florida is about 600 miles, mean breadth 90, and area 54,000 square miles, or 34,560,000 acres. This territory extends from lat. 24° 40′ to 31° N. and in long. from 3° to 10½° W.

Natural Geography.—Embracing 6 degrees of latitude, a considerable difference of seasons must be experienced in Florida; but from the general uniformity of surface, and from being enclosed on three sides by the sea, the transitions of temperature are seldom very rapid or violent. Florida is

naturally subdivided into two very different zones, by the 28th degree of latitude. Above the latter curve the surface of the country is more broken, better timbered, and soil much superior to the southern zone towards Florida point. The latter in great part marshy, flat, and devoid of timber, is the true palm tree section of the United States. In all Florida the proportion of good to bad soil is very small, but the asperities of the soil will, in some measure, be compensated by the mildness of the climate. Latitude 28° is a real limit of climate, as below that curve snow is unknown, and frost, though occasional, is rare. The sugar cane can be cultivated successfully, where the soil will suit, in all the maritime parts of Florida, as may the orange, lime, and shaddock. Rice, indigo, tobacco, Indian corn, and a rich variety of fruit trees compose the most important cultivated vegetables of Florida; the vine, olive, and perhaps coffee, might be added.

Many of the northern districts of Florida are finely variegated and fertile tracts. The country around the new capital Tallahassee, is calcareous and remarkable for streams rising into considerable volumes, and then sinking into the vast chasms in the limestone rocks. Natural bridges are frequent, and remarkable in the various branches of Santa Fe river.

Florida has been considered, when compared with its tropical neighbourhood, a healthy country. Humboldt, and others, regard the palms as marking the range of tropical diseases; a connection, it is probable, not altogether imaginary. A similar coincidence has been remarked between disease and the long moss of Louisiana, Florida, and Georgia. These two vegetables advance and terminate in most instances nearly together.

Florida though, for a country containing upwards of 1000 miles of sea coast, not abounding in good harbours, does, however, possess a few which are

excellent; Pensacola, Tampa, Charlotte Harbour, St. Augustine, and St. Mary's, are the principal, the two former and the latter admitting vessels of 20 feet draught. One large river, the Appalachicola, has its estuary in Florida, but does not afford a depth of water in proportion to its magnitude.

The rivers of Florida have been noticed, the principal are St. John's, St. Mary's, Suwannee, Ocklockonne, Appalachicola, Choctaw, the confluents of Pensacola, and Perdido; which can be seen under their respective heads.

Political Geography.—Tallahassee, the present capital of Florida, is situated in the county of Leon, and in that remarkable calcareous region, already noticed, between the Ausilly and Ocklockonne rivers. The city, for such it is denominated by charter, is not placed on any navigable stream, nor is any navigable point within several miles of the place. The location was made under the authority of the Legislative Council of Florida, December 12th, 1824, at N. lat. 30° 27′, long. 7° 23′ W., about 26 miles nearly due north from Ocklockonne bay.

Counties.	*Chief towns.*
Alachua, *m.*	Dell's
Duval, *n. e.*	Jacksonville
Escambia, *n. w.*	Pensacola
Gadsden, *m. n.*	Quincy
Hamilton, *m. n.*	Miccotown
Jackson, *n. w.*	Websville
Jefferson, *m. n.*	Monticello
Leon, *m. n.*	Tallahassee
Madison, *m. n.*	Hickstown
Monroe, *extreme s.*	Thompson's Island
Mosquetoe	Xemska
Nassau, *n. e.*	Fernandina
St. John's, *s.*	St. Augustine
Walton, *w.*	Alaqua
Washington, *m.*	Holmes' Valley.

Of the population of Florida I am unable to speak with any precision. At the cession of the territory, in 1821, the inhabitants were estimated at 10,000, and have no doubt increased; 14 or 15,000 would, it is probable, be a moderate estimate for the existing numbers.

History.—Florida, from *Pasqua Florida*, or Palm Sunday, was imposed by Juan Ponce de Leon, the Spanish discoverer, in 1512. When imposed, and long afterwards, the name of Florida was general, in Spanish literature, for the Atlantic coast of North America. The first effective colonization was made at St. Augustine, in 1565, when that city was founded. With many vicissitudes of fortune, Florida remained to the Spaniards until 1763, when it was ceded to the British government. In 1781, the Spanish governor of Florida, Don Galvez, conquered West Florida, and by the treaty of Paris, 1783, the whole of both Floridas were re-ceded by Great Britain to Spain.

In 1819, negociations were opened between the United States and Spain, for the cession of Florida to the former, and a treaty to that purpose formed. This treaty was ratified by Spain, October 1820; by the United States, February 1821; and in July, of the latter year, finally taken possession of by General Jackson, by order of his government. It is now a territory of the United States.

GEORGIA.

Boundaries, extent, and position.—By the Atlantic ocean S. E., Florida S., Alabama W., North Carolina N., and South Carolina N. E.

	Miles.
Beginning on the Atlantic ocean at the mouth of Savannah river, and thence along that ocean to the mouth of St. Mary's river	105
Up St. Mary's river - - -	80

	Miles.
Carried over - - - - -	185
Thence along Florida, westward, to the junction of Flint and Chatahooche rivers	150
Up Chatahooche to the south-east angle of Alabama - - - - -	25
Thence with the eastern boundary of Alabama to Nickajack on the southern boundary of Tennessee - - - - -	306
Thence east along Tennessee to north-west angle of North Carolina - -	80
Continuing east, along N. Carolina, to Chatuga branch of Savannah river - -	67
Down Chatuga, Tugaloo, and Savannah rivers to the mouth of the latter - -	260
Entire outline - - - -	1073

Length from north to south 300, mean breadth 203, and area 61,000 square miles, equal to 39,040,000 statute acres. Extending from lat. 30° 22′ to 35° N., and in long. from 3° 50′ to 8° 38′ W.

Natural Geography.—Georgia is very much the most diversified state of the United States, both as to soil and relative elevation. It is subdivided by the hand of nature into three zones, with very distinct features. The lowest, most south-eastern, and what may be called the tropical zone, rises by a very slow acclivity from the Atlantic ocean, commencing in a series of islands. This is in its oceanic margin a recent alluvion; and is followed by a sandy tract of little more elevation, but reaching to the falls of the rivers. The third, or hilly, and finally mountainous section, is most extensive, fertile, and salubrious. From the level of the Atlantic islands to the mountain vales of Chatahooche and Etowah rivers, must be a difference of elevation of 12 or 1500 feet; at the lowest an equivalent to 3° of lat. which, added to 4° 38′ gives a difference of 7° 38′ in temperature.

The mountainous northern extremity rises into an elevation favourable to the apple and cereal gramina, while the southern extremity on the Appalachicola, Suwanne, St. Mary's, Santilla, and Alatamaha, has a temperature suitable to the sugar cane, orange, olive, date, and lemon. Between those extremes vegetable production has indeed an extensive limit; it may be asserted that few, if any, regions of the earth, of equal extent, admit the profitable cultivation of more numerous vegetable species. Besides those already named, may be added cotton, rice, tobacco, and indigo; of fruits, the peach, fig, pomegranate, plum, &c.

In its effects on the human body the climate of Georgia is not less marked, in its extremes, than on vegetable life. The sea border is a region of palms, and, as has been demonstrated in this View, has a mean temperature at least two degrees above that of equal latitudes in the basin of Mississippi. In summer the Atlantic border is a real tropical climate, whilst towards North Carolina and Tennessee the mountain vales smile under a mitigated sun.

In metallic matter, except iron, Georgia is not productive. Cotton, rice, and sugar may be regarded its staples. The former has, however, so far predominated, and the Atlantic islands producing a peculiar kind of superior value, that it might, without much error, be considered the exclusive staple of the state. The sweet orange and sugar cane can be cultivated with complete success along the whole ocean border, and for some distance inland.

Political Geography.—Milledgeville, the seat of government, is situated on the right bank of Oconee river, in Baldwin county, N. lat. 33° 06′, long. 6° 16′ W. The whole state being an immense inclined plain, down which navigable rivers flow at every 20 or 30 miles distance, precludes the rise of any very large interior city. The fine streams of the Savannah, Ogeeche, Alatamaha, Santilla, and St.

Mary's on the S. E., the Appalachicola and its confluents S. W., and the higher branches of the Coosa N. W. give great navigable facilities, but divert the commerce of the inhabitants to too many and distant points to admit the rise of large emporia. Savannah, on Savannah river, with a population of 8000, is the largest city in the state. For political purposes Georgia is subdivided into the counties of —

Counties.	*Chief towns.*	*Pop.* 1820.
Appling, *s.*	Applingville	1264
Baker, *s. w.*	Byron	
Baldwin, *m.*	MILLEDGEVILLE	7734
Bibb, *m. w.*	Macon	
Bryan, *s. e.*		3021
Bullock, *s. e.*	Statesboro	2578
Burke, *s. e.*	Waynesboro	11577
Butts, *m. w.*	Jackson	
Camden, *s. e.*	Jefferson	4342
Carroll, *w.*	Carrollton	
Chatham, *e.*	Savannah	14737
Clarke, *m. n.*	Watkinsville	8767
Columbia, *e. n.*	Columbia C. H.	12695
Coweta, *w.*	Newnam	
Crawford, *m. w.*	Knoxville	
Decatur, *s. w.*	Bainbridge	
De Kalb, *w.*	Decatur	
Dooly, *s. w.*	Berrien	
Early, *s. w.*	Blakely	768
Effingham, *e.*	Willoughby	3018
Elbert, *e. n.*	Elberton	11788
Emanuel, *m. e.*	Swainsboro	2928
Fayette, *w.*	Fayetteville	
Franklin, *n. e.*	Carnesville	9040
Glynn, *s. e.*	Brunswick	3418
Greene, *m. n.*	Greensboro	13589
Gwinnett, *n. w.*	Lawrenceville	4589
Habersham, *n.*	Clarkesville	3145
Hall, *n.*	Gainesville	5086

Counties.	*Chief towns.*	*Pop.* 1820.
Hancock, *m.*	Sparta	12734
Harris, *w.*	Hamilton	
Henry, *m. w.*	M'Donough	
Houston, *w.*	Perry	
Irwin, *s.*	Irwinville	411
Jackson, *m.*	Jefferson	8355
Jasper, *m.*	Monticello	14614
Jefferson, *m. e.*	Louisville	7056
Jones, *m.*	Clinton	16560
Laurens, *m.*	Dublin	5436
Lee, *w. s.*		
Liberty, *s. e.*	Riceboro	6695
Lincoln, *e.*	Lincolnton	6458
Lowndes, *s.*	Lowndboro	
Madison, *n. e.*	Danielsville	3735
M'Intosh, *s. e.*	Darien	5129
Marion, *s. w.*		
Merriwether, *w.*	Merriwether C. H.	
Monroe, *m. w.*	Forsyth	
Montgomery, *m. s.*	Mount Vernon	1862
Morgan, *m. w.*	Madison	13520
Muscogee, *w.*	Columbus	
Newton, *m. n.*	Covington	
Oglethorpe, *n. e.*	Lexington	14046
Pike, *w.*	Zebulon	
Pulaski, *m. s.*	Hartford	5283
Putnam, *m.*	Eatontown	15475
Rabun, *n.*	Clayton	524
Richmond, *e.*	Augusta	8608
Scriven, *e.*	Jacksonboro	3941
Talbot, *w.*	Talbotton	
Talliaferro, *m.*	Crawfordsville	
Tatnall, *s. e.*	Perry's Mills	2644
Telfair, *m. s.*	Jacksonville	2104
Thomas, *s.*	Thomasville	
Troup, *w.*	Troup C. H.	
Twiggs, *m.*	Marion	10640
Upson, *m. w.*	Thomaston	
Walton, *m. n.*	Monroe	4192
Ware, *s.*	Wareboro	

Counties.	*Chief towns.*	*Pop.* 1820.
Warren, *m. e.*	Warrenton	10630
Washington, *m.*	Sandersville	10627
Wayne, *s. e.*	Waynesville	
Wilkes, *e.*	Washington	
Wilkinson, *m.*	Irwinton	
Total		340,989

Summary of distributive Population.

Sections.	Whites.	Free Col'd.	Slaves.	Total.
Maritime tract	64,394	1,223	58,464	124,964
Central or hilly	96,724	519	83,825	181,068
Mountainous	29,250	76	5,621	34,957
Total	190,368	1,818	147,910	340,989

Of these, engaged in agriculture 97,221; in manufactures, 3,427; in commerce, 1,989.

In 1824, the population of Georgia had risen to an aggregate of 392,900; of whom 222,282 were white, and 170,618 people of colour. This is an increase very nearly at the rate of 5 per cent. per annum; and would yield in

1822	358,050	1827	456,968
1823	375,950	1828	479,816
1824	392,900	1829	503,800
1825	414,484	1830	529,000
1826	435,208		

History of Georgia.—This colony was the last founded by the British government in the now United States. Georgia was named, and granted by patent in 1732, to Gen. James Oglethorpe, and Savannah founded 1733. In 1752, it was made a royal government, and in 1755, a general representative assembly established. From its original foundation until the close of the last Indian war, 1818, Georgia has been more vexed by distressing petty warfare than any of the colonies. Whilst under Great Britain, the proximity of this colony to Flori-

da, exposed its southern frontier to frequent and ruinous invasions. In the revolutionary war it had its full share of danger and suffering, and it is only recently that the western border has been relieved from Indian depredation. Though colonised nearly a century, Georgia in many respects has had an advance similar to those states and territories which have been formed since the revolutionary war, and such is its progress at present, that in population and wealth it is rapidly gaining upon the more ancient states of the Atlantic slope. That part actutually organised into counties in 1829, comprises about 50,000 square miles, and contains only 10½ to the square mile. If populated generally equal to some of the central counties, say 30 to the square mile, would give an aggregate of 1,500,000, and if only equal to South Carolina, about 20 to the square mile, one million of inhabitants.

ILLINOIS.

Boundaries, extent and position.—This state has the Mississippi river W. and S. W., Ohio and Wabash rivers S. E., Indiana E., lake Michigan N. E. and the Trans-Michigan territory N.

Commencing at the junction of Ohio and Mississippi rivers, and thence up the latter opposite Missouri to the mouth of Le Moine river, by comparative courses,	340
Continuing up the Mississippi to N. lat. 42° 30′,	200
Thence due E. to lake Michigan,	167
Along lake Michigan,	57
Thence due S. along W. boundary of Indiana,	162
Down the Wabash to the mouth,	120
Down the Ohio river to the mouth,	130
Having an entire outline of	1176

Length from the junction of Mississippi and Ohio rivers at N. lat. 37°, to the northern boundary of the state, N. lat. 42° 30′, 382 miles; mean breadth 154, area 58,900 square miles, equal to 35,696,000 statute acres.

Natural Geography.—Illinois is, after Virginia, Georgia and Missouri, the fourth in point of extent, and in general fertility of soil the first state of the United States. Extending over a zone of 5½° of latitude, it embraces the greatest extreme north and south ; Georgia and New York only embracing each 4½°. Illinois is comparatively a great and very gently inclining plain. It is a country of so very little difference of level, that it may be doubted whether the general level varies 600 feet. The mouth of Ohio, we have seen, is about 321 feet above the level of the Atlantic Ocean, and it is probable that from 400 to 1000 would be a safe estimate for the state. With all its uniformity of surface, the climate at the extremes, differs very materially in temperature. By reference to tables 42 and 45, pages 376 and 379, it will be seen that at Green bay, 2 degrees north from Illinois, the thermometer has fallen to 38 below 0°, and at New Harmony 38° 11′ N. opposite the southern part of that state, to 5° below 0°. If a due comparison is made with contiguous places, it is rendered doubtful whether the mean heat of any part of Illinois would amount to 53°. The Council Bluffs lat. 41° 25′, is found only 50°.82 of Fahrenheit. The too high temperature of New Harmony and Cincinnati, by the table, has been accounted for, and shewn to arise from observing exclusively while the sun was above the horizon.

Illinois in regard to soil, resembles Ohio and Indiana, but with less of flat and irreclaimable land than either, and generally more rich plain than both the latter taken together. The surface is rolling on the S. and W. and level on the N. and E.

The exotic and cultivated vegetables of Illinois are so nearly the same with those of Ohio, Indiana and Kentucky, as to demand but slight separate notice.

Though but a confined section of Illinois has yet been found rich in metallic matter, that section is peculiarly abundant in one of the most useful metals, lead. The county of Jo-Daviess, with the chief town Galena, occupies the N. W. angle of the state and that part of a lead region which is included in Illinois. The ore is also found on the western side of Mississippi opposite the county of Jo-Daviess, and is very abundant and rich.

In navigable facilities, Illinois in a particular manner abounds. It is literally bordered and traversed by streams of the first importance, and with one angle protruded to lake Michigan. The ease with which a canal navigation could be opened from Illinois river into the Canadian sea, has been discussed in more than one part of this view. Illinois is in brief, a state on which a very dense population may and will be supported.

Political Geography.—Vandalia the capital of Illinois stands on the right bank of Kaskaskia river, at N. lat. 38° 57′, lon. 11° 58′ W., about 70 miles N. E. by E. from St. Louis. For civil purposes, Illinois is divided into counties as follows.

Counties.	*Chief Towns.*	*Pop.* 1820.
Adams, *w.*	Quincy	
Alexander, *s.*	America	626
Bond, *m.*	Greenville	2931
Calhoun, *w.*	Gilead	
Clark, *e.*	Clark, C. H.	931
Clay, *e.*	Maysville	
Clinton, *m. w.*	Carlisle	
Crawford, *e.*	Palestine	3022
Edgar, *e.*	Paris	
Edwards, *e. s.*	Albion	3444
Fayette, *m.*	VANDALIA	

Counties.	*Chief Towns.*	*Pop.* 1820.
Franklin, *s. e.*	Frankfort	1763
Fulton, *m. w.*	Lewistown	
Gallatin, *s. e.*	Shawneetown	3155
Greene, *w.*	Carrolton	
Hamilton, *s. e.*	Mc. Leansboro	
Hancock,		
Henry,		
Jackson, *s. w.*	Brownsville	1542
Jefferson, *m. s.*	Mount Vernon	691
Jo-Daviess, *n. w.*	Galena	
Johnson, *s.*	Vienna	843
Knox, *n. w.*		
Lawrence, *e.*	Lawrenceville	
Putnam,		
Lay,		
Madison, *w.*	Edwardsville	13550
Marion, *s. w.*	Salem	
Mercer, *w. n.*		
Monroe, *w. s.*	Waterloo	1537
Montgomery, *m.*	Hillsboro	
Morgan, *w.*	Jacksonville	
Peoria, *m. n.*	Peoria	
Perry, *w. s.*	Pinkneyville	
Pike, *w.*	Atlas	
Pope, *s.*	Golconda	2610
Randolph, *w. s.*	Kaskaskia	3492
St. Clair, *w. s.*	Belleville	5253
Sangamon, *m. n.*	Springfield	
Schuyler, *w.*	Bardstown	
Shelby, *m.*	Shelbyville	
Tazewell, *m. n.*	Mackinau	
Union, *s.*	Jonesboro	2362
Vermillion, *e.*	Carolus	
Wabash, *e. s.*	Centreville	
Warren, *w. n.*		
Washington, *m. w.*	Covington	1517
Wayne, *m. s.*	Fairfield	1114
White, *e. s.*	Carmi	4828
Total,		55,211

By the census of 1820 there were in Illinois, whites 53,788, free coloured persons 506, and slaves 917. Of these were engaged in agriculture, 12,395; in manufactures 1007; and in commerce 233.

History.—The country along the Illinois and Mississippi rivers, was discovered by the French about 1673, and soon after small and unimportant colonies formed at Kaskaskia, and a few other places. These colonies never assumed any magnitude of consequence, and when, at the close of the revolutionary war, this region became a part of the United States territory, it was claimed under the charter of Virginia, and was a wilderness in the far greatest part of its extent. Virginia ceded her claim, and in 1787, Illinois was included in the territory N. W. of the Ohio. In 1801, it was included with Indiana and remained so until 1809, when Illinois was separated and made a territory. In 1818 by act of Congress, a state constitution was formed, and in December of the same year, Illinois became one of the United States.

INDIANA.

Boundaries, extent and position.—The Ohio river or Kentucky S. and S. E., Ohio E., Michigan Territory N., Lake Michigan N. W., Illinois W. and Wabash river S. W.

Commencing on the Ohio river at the influx of the Wabash, thence up the latter opposite Illinois,	120
Thence due N. along Illinois, to lake Michigan,	162
Along lake Michigan,	33
Thence due E. along Michigan territory,	110
Thence due S. along Michigan to the N. W. angle of Ohio,	10
S. continued along Ohio,	177
Thence down Ohio by the bends 353, but by comparative courses,	280
Having an entire outline of	892

Extending from lat. 37° 48′ to 41° 36,′ and in lon. from 7° 44′ to 11° W. Indiana is in length 264 miles; in mean width 124, and area 34,000 square miles.

Natural Geography.—With very nearly similar latitudes to Illinois, but little if any essential observation on the climate of Indiana can be added to what was made under the head of the former. In regard to the respective physiognomy of the two states, the resemblance is again equally strong. Both states occupying part of the great western inclined plain, stretching from the Appalachian system, a rise of general level is perceptible near the Ohio. The hills along that stream present a bolder front, but on advancing northward into the interior of Indiana, the surface is more monotonous than that of Illinois. The true character of the rivers of this part of the United States has been sketched. Indiana, though not so advantageously situated respecting navigable streams as Illinois, yet comprises in the Ohio, and the Wabash and its branches, great facilities of transportation, and in the moderate elevation of surface above the level of the rivers, canals will be comparatively easy of execution.

The elements given in tables 63 and 67, will serve to exhibit the temperature of southern Indiana, as far as dependance can be placed on these elements. Of the northern and unsettled sections, we have no data to particularise the seasons, but from analogy the general temperature must greatly exceed that of Ohio. Under the head of metals, not yet explored, the natural history of Indiana is barren. Salt, iron, and some other fossils are met with, but mining enterprise has not been brought into extensive operation.

The agriculture of this state, like its settlement, is in its infancy, and in mode and objects of cultivation, differs but very little from that of Ohio and Illinois. Grain and stock are the staples. Indiana

and Illinois may be said to touch rather than advance into the cotton region. That vegetable may indeed, be cultivated in the southern part of both states, but it is more than probable that the general temperature of the seasons is too low to admit its ever becoming a valuable staple.

Political Geography.—Indianapolis, the seat of the government, is situated in Marion county, on the left bank of White river, at N. lat. 39° 47′, and lon. 9° 03′ W. and very near the centre of the state.

Counties.	*Chief Towns.*	*Pop.* 1820.
Allen, *e. n.*	Fort Wayne	
Bartholomew, *m.*	Columbus	
Clark, *s.*	Charleston	8709
Carroll, *n. w.*	Delphi	
Clay	Bowling Green	
Crawford, *s.*	Fredonia	2583
Daviess, *s. w.*	Washington	3432
Dearborn, *e. s.*	Lawrenceburgh	11468
Decatur, *m. w.*	Greensburgh	3677
Delaware, *m. e.*	Munseytown	
Dubois, *s. w.*	Portersville	1168
Fayette, *e.*	Connorsville	5950
Floyd, *s.*	New Albany	2776
Fountain, *w.*	Covington	
Franklin, *e.*	Brookville	10763
Gibson, *s. w.*	Princeton	3876
Greene, *w.*	Bloomfield	
Hamilton, *m.*	Noblesville	
Hancock, *m.*	Sugar Creek	
Harrison, *s.*	Corydon	7875
Hendricks, *m.*	Danville	
Henry, *e.*	New Castle	
Jackson, *m. s.*	Brownstown	4010
Jefferson, *s. e.*	Madison	8038
Jennings, *s. e.*	Vernon	2000
Johnson, *m.*	Franklin	
Knox, *w. s.*	Vincennes	5437
Lawrence, *m. s.*	Bedford	4116
Madison, *m.*	Pendleton	

Counties.	*Chief Towns.*	*Pop.* 1820.
Marion, *m.*	INDIANAPOLIS	
Martin, *m. s.*	Hindostan	1032
Montgomery, *m. w.*	Crawfordsville	
Monroe, *m. s.*	Bloomington	2672
Morgan, *m.*	Martinville	
Orange, *s.*	Paoli	5368
Owen, *m. w.*	Spencer	838
Parke, *w.*	Rockville	
Perry, *s.*	Troy	2330
Pike, *s. w.*	Columbia	1472
Posey, *s. w.*	Mount Vernon	4061
Putnam, *m. w.*	Green Castle	
Randolph,	Winchester	1808
Ripley, *s. e.*	Versailles	1822
Rush, *m. e.*	Rushville	2334
Scott, *s.*	Lexington	
Shelby, *m.*	Shelbyville	
Spencer, *s.*	Rockport	1882
Sullivan, *w.*	Merom	3498
Switzerland, *s. e.*	Vevay	3934
Tippecanoe, *w. n.*	Lafayette	
Union, *e.*	Liberty	1798
Vanderburgh, *s. w.*	Evansville	
Vermillion, *w.*	Newport	
Vigo, *w.*	Terre Haute	3390
Wabash,		147
Warren,		
Warwick, *s. w.*	Boonville	1749
Washington, *s.*	Salem	9039
Wayne, *e.*	Centreville	12119
Total,		147,198

Of these, by the census of 1820, were whites, 145,758; free persons of colour, 1,230; and slaves, 190; the whole thus classed: engaged in agriculture, 61,315; in manufactures, 3,229; and in commerce, 429.

Progressive Population.

1800	5,640	1825	250,000
1810	24,520	1828	300,000 rising.
1820	147,178		

History.—The first known civilized settlement made in Indiana, was formed about 1690, by the French at Vincennes, but remained of little consequence. This remote village was reached by the calamities of the revolutionary war, and followed the fortune of other parts of the western country. Settlements, by the people of the United States, began to be extensively formed after the treaty of Grenville, in 1795. It was erected into a territory, including Illinois, in 1801. The latter was separated from the former in 1809, when each constituted an independent territory. In 1815, Indiana having the requisite number of inhabitants, 60,000, was permitted by Congress to form a state constitution, which was done, and in the following year was formally admitted into the Union as an independent State.

KENTUCKY.

Boundaries, extent, and position.—Virginia E., Tennessee S., Mississippi river or state of Missouri, S. W.; Ohio river, or Illinois and Indiana N. W.; Ohio river, or state of Ohio, N. E.

	Miles.
Commencing on Mississippi river at the N. W. angle of Tennessee, thence up that stream opposite the state of Missouri, to the mouth of Ohio	42
Up Ohio river opposite the state of Illinois, to the mouth of Wabash,	130
Continuing up Ohio river opposite Indiana by comparative courses, to the influx of Great Miami,	280
Continuing up Ohio river, opposite the state	

of Ohio, to the mouth of Big Sandy,	173
Thence up Big Sandy to its passage through Cumberland mountain,	70
Along Cumberland mountains to the northern boundary of Tennessee, on lat. 36° 35′,	106
Thence westward, along Tennessee to Tennessee river,	242
Up Tennessee river to N. lat. 36° 30′,	12
Thence due west along N. lat 36° 30′, to the point of outset on Mississippi river,	84
Entire outline	1139

The greatest length of Kentucky is from the S. W. angle of the state on Mississippi river, to the extreme eastern point on Big Sandy, 380 miles; mean width 99, and area 37,680 square miles, equal to 24,115,200 statute acres.

Extreme S. at N. lat. 36° 30′; extreme N. at the great Miami Bend, 39° 08′; between longitudes 5° and 12° 25′ W.

Natural Geography.—A single glance upon its map is only necessary to shew that Kentucky must present considerable diversity of soil, surface, and climate. The S. E. part is mountainous, and from this section rise the most important rivers which traverse the state, Cumberland, Kentucky, Licking, and Great Sandy. The state is naturally divisible into three distinctive portions, the mountainous S. E.; comparatively level, in the centre and S. W.; and hilly, along the Ohio river. If contrasted, however, with the plains of Louisiana, Arkansas, and Missouri, no part of Kentucky is level. In no other parts of the United States do the water courses flow in chasms so deeply cut into the solid rocks. The substrata generally limestone. Towards the mountains the physiognomy of the country presents steep hills, with narrow, deep, and gloomy valleys; this aspect gradually changes in descending the rivers, and is followed by a fine rolling country, but with, in

many places, a scarcity of spring water. On the border of Tennessee, spreads the "*Barrens*," a very deceptive title, as this quarter of the state is by no means in a peculiar manner sterile. The timber of the N. E. section of Kentucky is Liriodendron, elm, oak many species, hickory many species, black walnut, cherry, and a variety of other trees; on the "*Barrens*," the timber trees are oak, chestnut, and elm, generally. The hills of the Barrens are round, gently sloping, and are locally designated "*Oak Knobs*," and in their form deviate remarkably from the common ridges which constitute what is usually denominated a hilly country.

The agriculture of this state partakes of the character of that of every state of the United States beyond the region of sugar and rice. In the southwestern counties, near and on Tennessee, Cumberland, and Mississippi rivers, cotton is a staple, whilst all the grains, fruits, and meadow grasses of the northern and middle states flourish in other sections. The climate is also an epitome of that of all other states on which it borders. The extremes are severe, both as to heat and cold. In the note to table 68, page 407, it is shewn that the thermometer, in the northern part of Kentucky, has fallen to 14° below zero. This might have been an extreme case, but compared to its latitude, the winters of Kentucky are long and severe.

The relative situation of this state is almost mathematically central. Including the already organized states and territories, there is no other state so nearly equi-distant from the extremes. This proximity to other members of the Union, combined with her extensive frontier on Ohio, confers great advantage on Kentucky as a manufacturing state, and the great proportion of her population engaged in manufactures shew how far the advantages of nature have been rendered available.

Political Geography.—Frankfort, the capital of

the state, stands on the right* bank of Kentucky river, in Franklin county, N. lat. 38° 48′, long. 7° 48′ W. 68 miles in a direct line S. S. W. from Cincinatti. Population 1820, 1679.

Counties.	*Chief Towns.*	*Pop. in* 1820.
Adair, *s.*	Columbia	8765
Allen, *s.*	Scottsville	5327
Anderson, *s.*	Lawrenceburg	
Barren,	Glasgow	10328
Bath, *m. e.*	Owingsville	7960
Boone, *n.*	Burlington	6542
Bourbon, *m. n.*	Paris	17664
Bracken, *n.*	Augusta	5280
Breckenridge, *n. w.*	Hardingsburg	7485
Bullitt, *n. w.*	Shepherdsville	5831
Butler, *s. w.*	Morgantown	3083
Caldwell, *w.*	Eddyville	9022
Callaway, *s. w.*	Wadesboro	
Campbell, *n.*	Newport	7022
Casey, *m. s.*	Liberty	4349
Christian, *s. w.*	Hopkinsville	10459
Clark, *m.*	Winchester	11449
Clay, *s. e.*	Manchester	4393
Cumberland, *s.*	Burkesville	8058
Daviess, *w.*	Owensboro	3876
Edmonson, *s.*	Brownsville	
Estil, *m. e.*	Irvine	3507
Fayette, *m.*	Lexington	23250
Fleming, *n. e.*	Flemingsburg	12186
Floyd, *e.*	Prestonburgh	8207
Franklin,	FRANKFORT	11024
Gallatin, *n.*	Port William	7075
Garrard, *m.*	Lancaster	10851
Grant, *n.*	Williamstown	1805
Graves, *s. w.*	Mayfield	
Grayson, *m. w.*	Litchfield	4055
Greene, *m. s.*	Greensburg	11943
Greenup, *n. e.*	Greenupsburg	4311
Hardin, *n. w.*	Elizabethtown	10498

* In speaking of the right or left bank of a stream, it is done in reference to a *descending* course.—H. S. T.

Harlan, *s. e.*	Mount Pleasant	1961
Harrison, *n.*	Cynthiana	12278
Hart, *m. w.*	Mumfordsville	4184
Henderson, *w.*	Henderson	5714
Henry, *n.*	New Castle	10816
Hickman, *s. w.*	Columbus	
Hopkins, *w.*	Madisonville	5322
Jefferson, *n. w.*	Louisville	20768
Jessamine, *m.*	Nicholasville	9297
Knox, *s. e.*	Barbourville	3661
Laurel, *s. e.*	London	
Lawrence, *e.*	Louisa	
Lewis, *n.*	Clarksburgh	3973
Lincoln, *m. s.*	Stanford	9979
Livingston, *w.*	Salem	3824
Logan, *s.*	Russelville	14423
Madison, *m.*	Richmond	15954
Mason, *n.*	Washington	13588
M'Cracken, *s. w.*	Wilmington	
Mead, *n. w.*	Brandenburgh	
Mercer, *m.*	Harrodsburgh	15587
Monroe, *s.*	Tomkinsville	4956
Montgomery, *m. e.*	Mount Sterling	9587
Morgan, *e.*	West Liberty	
Muhlenberg, *w.*	Greenville	4979
Nelson, *m.*	Bairdstown	16273
Nicholas, *n.*	Carlisle	7973
Ohio, *m. w.*	Hartford	3879
Oldham, *n. w.*	Westport	
Owen, *n.*	Owentown	2031
Pendleton, *n.*	Falmouth	3086
Perry, *e.*	Perry, C. H.	
Pike, *e.*	Pike, C. H.	
Pulaski, *s.*	Somerset	7597
Rock Castle, *m. s.*	Mount Vernon	2249
Russell, *s.*	Jamestown	
Scott, *m. n.*	Georgetown	14219
Shelby, *m. n.*	Shelbyville	21047
Simpson, *s.*	Franklin	4852
Spencer, *n.*	Taylorsville	
Todd, *s.*	Elkton	5089
Trigg, *s. w.*	Cadiz	3874

Counties.	*Chief Towns.*	*Pop.* 1820.
Union, *w.*	Morganfield	3470
Warren, *s.*	Bowling Green	11776
Washington, *m.*	Springfield	15987
Wayne, *s.*	Monticello	7951
Whitley, *s. e.*	Whitley C. H.	2340
Woodford, *m.*	Versailles	12207
Total - - - - - - -		564,317

Of this population, were whites 434,826; free coloured 2759; and slaves 126,732.

Engaged in	Agriculture	132,161
Do	Manufactures	11,779
Do	Commerce	1,617

History.—The first successful attempt, by the whites, to explore Kentucky, was made in 1767, by John Finley from North Carolina. Daniel Boone followed Finley, and, alone most part of the period, explored that region from 1769 to 1771. Boone conducted the first colony to the banks of Kentucky river, in 1775. Like every frontier colony in the now United States, attempted before 1795, the progress of Kentucky was made in tears and blood. Virginia claimed the soil of Kentucky, under her charter, and the country was settled under her authority. In 1777 it was laid out as a county. In 1785 the first step was taken to form an independent territory; Virginia gave consent to such separation whenever a majority of the inhabitants should vote such desire. It was not, however, until in June 1790, that Kentucky became one of the United States. The foundation of Transylvania University in 1798, and its re-organization in 1818, are the most important events in the history of that state since its admission into the Union. That seminary, located at Lexington, is the most extensive literary institution in the United States west of the Appalachian mountains.

LOUISIANA.

Boundaries, extent, and position.—Gulf of Mexico S. and S. E., Texas W., Arkansas N., and state of Mississippi E. and N. E.

	Miles.
Beginning at the mouth of the Sabine, and thence up that river, opposite Texas, to a point where it is intersected by 32° lat.	200
Thence along a meridian line to lat. 33°	69
Thence due east along Arkansas to the right bank of the Mississippi river	172
Down the Mississippi, opposite the state of Mississippi, to N. lat. 31°	235
Thence due east along Mississippi state to the right bank of Pearl river	105
Down Pearl river to its mouth	60
Thence along the shores of the Gulf of Mexico to the mouth of Sabine	400
Entire outline	1241

The longest line that can be drawn in Louisiana is from the mouth of the Mississippi to the northwest angle on Sabine 380 miles; the irregular form renders a correct estimate of its mean width difficult, but 120 miles is not far from accurate; area 48,220 square miles, equal to 30,860,800 statute acres, or 36,460,000 French arpents. Extreme S. at N. lat. 28° 56′. Extreme N. at N. lat. 33°. Between longitudes 11° 36′ and 17° 16′ W.

Natural Geography.—There is not, perhaps, on earth another continuous tract of equal extent, presenting a greater diversity of soil than does Louisiana. Within its limits are included all the varieties from the most recent, and still periodically submerged alluvion, to hills approaching the magnitude of mountains: every quality of soil, from the most productive to the most sterile; and from unwooded plains to perhaps the most dense known forests.

The necessary notice of this peculiar region has been in great part anticipated in the physical part of this View. The rivers, and the annual overflow of the Delta, as well as the general features of the soil, have been discussed. In the chapter on climate it is shewn that the seasons of Louisiana are colder, by a difference of at least two degrees of latitude, than are those of a similar latitude on the Atlantic coast. This has been demonstrated by the relative locality of vegetables, both indigenous and exotic. The orange and sugar cane cease in Louisiana, the former at about latitude 30°, and the latter at about a degree farther north.

Sugar and rice are the staples of the state, generally, below lat. 30°, and cotton above that curve. The latter is, however, cultivated in every section of the country, and sugar, partially, to near the northern boundary, but avidity of gain in some instances has instigated to an infructuous struggle with the laws of nature.

In fruits Louisiana is abundant; amongst those successfully cultivated may be mentioned, the apple in the northern parishes; the peach, very excellent, and the fig, of several species, over the whole state; the orange nearly commensurate with sugar cane; the pomegranate over the state wherever attempted; in a similar manner the vitis vinifera has succeeded. Legumes and garden vegetables, generally, seem to have no assignable limit, specifically, on a soil so varied, and in a climate so near the tropics. It may seem incredible that horticulture should be neglected in Louisiana, but such is the melancholy fact; and a fact the more unaccountable, as some individual gardens would seem irresistibly alluring to imitation.

The entire front of Louisiana, from the Pearl to the Sabine, is a selvidge of marsh, in most part devoid of timber, traversed by the water courses, and rising very slowly towards the interior. The rise of

the Delta, to its utmost extremity at the efflux of the Atchafalaya, does not, it is probable, amount to 5 feet. I have seen the tide, in fact, ebb and flow, in autumn when the rivers were low, in the Atchafalaya above the influx of Courtableau. Another circumstance, to which I have also been a witness, evinces the very small inclination of all Louisiana. When the Mississippi is in flood, and the overflow of the Delta at its height, the Courtableau, Red, and Wachitau rivers are rendered stagnant to a great distance above their contact with the Mississippi water.

I have experienced some painful reflections from anticipating that Louisiana, or at least the Delta, is still liable to destructive inundations. This truth, for I am still confident it is too true, struck me when visiting the various parts of that most peculiar country. If the hurricane of the 18th and 19th of August, 1812, had taken place two months earlier in the year, the whole Delta would have been submerged. Travelling along Connecticut river, and viewing those alluvial plains noticed in this View, page 164, a similar idea struck my mind, that at irregular intervals of time they were liable to destructive floods. How far I was right in the latter case may be seen by the subjoined extract:

Awful Calamity.—We have been favoured with the following extract of a letter from a gentleman in Hartford, to his friend in this city, dated Sunday morning, September 7, 1828.

"You doubtless know something of our freshet, but the half has not been told. It is now nearly at the highest, though still swelling a little. It is a melancholy spectacle. Probably no calamity so general has occurred since the settlement of the country bordering on this valley. It is sickening to behold our rich meadows, only on Monday last literally groaning with the greatest crop ever known,

now covered over, as far as the eye can reach, like a great sea. Not a vestige of land can be seen on the Wethersfield road east. The long East-bridge, next to East-Hartford, on the meadow, was expected to go off. The trussels were raised, and the water is up to the floor. Several live oxen floated by yesterday—one pair yoked. Several are now standing on the highest part of south meadow, their backs just out of water. A red fox and a grey rabbit, probably visiters from Vermont, were caught just east of Morgan's bridge. The timber prepared and laid for the guard lock at Enfield Falls went by two days since;—all the embankment under water, leaving not even a ripple. The water is 24 feet above low water mark. It is superfluous to say that all the crops on the meadows are destroyed, for a hundred or two miles up the country. Farmington canal is injured in several places, we hear, and the culvert partly gone. The same writer states that the losses and damages cannot be estimated less than 500,000 dollars."*

The vicinity of Hartford, Connecticut, has been known to civilized man above two centuries; the Delta of the Mississippi about 130 years.

The climate of Louisiana demands the more particular notice, as it has been very much misunderstood. In recording the mean temperature of places, in table 45, page 379, I have set down that of New Orleans, comparatively, at 69° 01′ Faht., but am convinced that the real mean of that city does not exceed 63°; and, what is of more consequence to vegetation than mean heat, that the extreme of winter cold over lower Louisiana is greatly more in excess than it is even at Charleston, South Carolina. Compare the range of the thermometer at Pensacola, Baton Rouge, and Cantonment Jessup, on Sa-

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* Aurora and Pennsylvania Gazette, Sept. 12, 1828.

bine, with that of Charleston, St. Augustine, and Tampa bay, and we find the lowest point to which the thermometer fell at the city of Charleston to be +19°, whilst at Pensacola the mercury had sunk to +11°, at Baton Rouge to +18°, and at Cantonment Jessup to +7°.

If we add together the respective highest and lowest range of the thermometer at Pensacola, Baton Rouge, and Cantonment Jessup, it may be remarked we have so low a mean of the three places combined as 54° 5′. The latter is too low, but it is no doubt much nearer the real mean of central Louisiana than is 68° 35′, the combined mean deduced from the individual mean in table 45. In reality as far as vegetation can decide the question, the seasons may be considered milder at Charleston, South Carolina, lat. 32° 42′, than at New Orleans in lat. 30°.

Political Geography.—The principal city of Louisiana, and in respect to population, in the southern part of the United States, stands on the left bank of the Mississippi 105 miles above its mouth, and at N. lat. 30°, long. 13° 06′ W. The increase of population of this city has been rapid and steady. I was there in April 1805, when the inhabitants were estimated between eight and ten thousand, in 1820 they amounted to 42,900, and now exceed 60,000.

For civil and municipal purposes Louisiana is subdivided into parishes.

Parishes.	*Chief towns.*	*Pop.* 1820.
Ascension, *m. s.*	Donaldsonville	3728
Assumption, *s.*	Assumption	3576
Avoyelles *m.*	Marksville	2245
Catahoola, *n. e.*	Catahoola	2287
Claiborne, *n. w.*		
Concordia, *e. n.*	Concordia	2626
E. Baton Rouge, *m. e.*	Baton Rouge	5220
E. Feliciana, *m. c.*	Jackson	
Iberville, *m. s.*	Iberville	4414

Parishes.	*Chief Towns.*	*Pop.* 1820.
Jefferson, *s. e.*		
Lafayette, *s.*	Moutonville	
La Fourche Interior, *s.e.*	Thibadeauxville	3735
Natchitoches, *n. w.*	Natchitoches	7486
Orleans, *e. s.*	New Orleans	41351
Plaquemines, *s. e.*	Plaquemines	2354
Point Coupee, *m.*	Point Coupee	4912
Rapides, *m.*	Alexandria	6065
St. Bernard, *e. s.*		2635
St. Charles, *s. e.*		3862
St. Helena, *e.*	St. Helena	3026
St. James, *m. s.*	Bringier's	5686
St. John Baptiste, *m.*	Dubourg's	3854
St. Landry, *s. w.*	Opelousas	10085
St. Martin's, *s.*	St Martinsville	12063
St. Mary's, *s.*	Franklin	
St. Tammany, *e.*	Covington	1723
Terre Bonne, *s.*		
Wachitau, *n.*	Monroe	2609
Washington, *e.*	Franklinton	2517
W. Baton Rouge, *m.*	C. H.	2335
W. Feliciana, *m.*	St. Francisville	12732
Total,		153,407

Of these, were whites 73,867; free coloured persons 10,476; and slaves 60,064. Thus classified as to employment: engaged in agriculture, 50,045; in manufactures, 5797; in commerce, 6168.

Louisiana increased nearly 80 per cent from 1810 to 1820, and if the advance continues at the same ratio the aggregate will exceed 276,000 in 1830. When thus augmented, still the distributive population will fall short of 6 to the square mile. There is, indeed, large spaces in Louisiana which must always remain negative in the cultivateable area. The existing settlements, except the parishes of E. Baton Rouge W. and E. Feliciana, St. Tammany, Washington, and St. Helena extend in lines along

the streams; or, as in Attacapas and Opelousas, in lines along the margin of the prairies. This state is, in brief, marked by peculiar features in every respect, which give to its natural and artificial features strong contrasts with any other part of the United States.

History.—The first effective settlement of Louisiana was made in 1699, by a small French colony under the command of M. D'Iberville. The city of New Orleans was founded in 1717. In 1763 the whole of Louisiana was ceded to Spain, but from the resistance of the inhabitants, that power did not obtain possession until 1769. Spain retained her authority in this province until 1800, when, by a secret treaty, it was re-ceded to France. The state of internal policy not admitting France to take possession of Louisiana, it was formally ceded by treaty, in April 1803, and in the following December given up to the United States, by the French Colonial Prefect, Col. Laussat.

As ceded, Louisiana contained all that is now comprised in the state so called, Arkansas, Missouri, and the illimitable regions north-westward. In March, 1804, Louisiana was erected into a territory, by the name of Orleans, with the limits stated at the head of this article; the residue, beyond N. lat. 33°, was erected into Missouri territory. In 1811, having acquired adequate population, Congress granted the inhabitants power to form a state constitution. In 1812, the necessary steps having been taken, the state of Louisiana was ranked in the list of independent states of the United States.

MAINE.

Boundaries, extent and position.—Atlantic Ocean S., New Brunswick E., Lower Canada N. and N. W., and New Hampshire S. W.

	Miles.
Beginning on the Atlantic Ocean at the mouth of Passamaquoddy bay, thence S. W. by W. along the Atlantic Ocean to the mouth of Piscataqua river,	235
Up the Piscataqua and Salmon Falls river to the source of the latter,	40
Thence along the eastern boundary of New Hampshire, by a line inclining a little west of north, to the Highlands, between the sources of the Atlantic streams and those of the small confluents of St. Lawrence,	115
Along the Highlands to a point a little above N. lat. 48° and 9° 08′ E.	300
Thence due S. along the western boundary of New Brunswick to the source of St. Croix river,	143
Down St. Croix river and Passamaquoddy bay to the Atlantic Ocean and place of beginning	100
Entire outline,	933

The prefixed map of the northern part of Maine, was expressly projected and engraved, to render apparent the true relative positions in controversy between the governments of the United States and Great Britain, respecting the extension of Maine beyond the sources of the St. Croix river. The map will serve to place the geographical part of the question in a clear light, and deserves the more confidence as it has been constructed from original documents forwarded to Mr. Henry S. Tanner.

With the limits claimed by the United States, Maine will reach from Gerriches Point, the N. E. boundary of Portsmouth harbour, at N. lat. 43° 04′ to the sources of the Mattawaska branch of St. Johns river, N. lat 48, and long. from 5° 56′ to 10° 02′ E.

The greatest length of Maine is, from S. W. to N. E. 350; mean breadth 92; and area by the rhumbs, 32,194 square miles.

Natural Geography.—Extending over 5° of latitude and differing in relative level at least 800 feet, Maine presents at its extremes great diversity of climate. The surface of this state differs essentially from any other part of the United States. The coast between Casco bay and Passamaquoddy, is excessively indented by long projecting points and by innumerable islands, between which are discharged the fine streams of Kennebeck and Penobscot, with many others of less volume, affording an unequalled variety of harbours. Upon this very broken coast is poured a tide of from 20 to 40 feet. So excessive is the ocean swell, as to break the winter ice to fragments, and to preserve open the harbors of Maine, whilst those are closed several degrees more southward.

The interior of the state is a congeries of hills of great variety of form, without any mountain ridges of much elevation or mass, with intervening lakes and streams. With Maine, indeed, commences in the north east part of the United States, that lake section of North America, which extends to the utmost known northern regions of the continent. Though not very elevated, the interior of Maine rises so rapidly from the sea coast, as to preclude the flow of the tide far inland, though few other states of the United States are more completely traversed by navigable rivers.

A very dense forest covered Maine in its natural state, and the settlements being yet restricted to a comparatively narrow zone along the sea coast, timber constitutes the most valuable staple of the state. Grain is, however, cultivated to advantage, as are meadow grasses, flax and orchard trees. By reference to tables 42 and 45, it will be seen that the seasons of Maine must be severe, the thermometer

having a range of 113 degrees, rising to 94° above and falling to 19° below zero, at Eastport lat. 44° 44′.

Political Geography.—Portland, the principal city and seat of government in Maine, stands on the S. W. side of Casco bay, N. lat. 43° 38′, lon. 6° 44′ E. This city contained in 1810, 7169, and in 1820, 8531 inhabitants. The harbour is excellent, and for reasons already given, seldom seriously incumbered with ice. The counties of Maine are:

Counties.	*Chief Towns.*	*Pop.* 1820.
Cumberland, *s. w.*	PORTLAND	49,339
Hancock, *s.*	Castine	31,071
Kennebeck, *m.*	Augusta	42,632
Lincoln, *s.*	Wiscasset	52,953
Oxford, *w.*	Paris	27,185
Penobscot, *n.*	Bangor	13,931
Somerset, *n. w.*	Norridgewock	21,698
Waldo, *s.*	Belfast	
Washington, *e.*	Machias	12,746
Wiscasset, *s.*	Warren and Topsham	
York, *s.*	York and Alfred	46,284
Total		297,839

Of this aggregate engaged in	Agriculture,	55,031
do.	Manufactures,	7,643
do.	Commerce,	4,297

If the distributive population of Maine is estimated in comparison to the whole state, it would have, in 1820, but little exceeding 9 to the square mile; the really inhabited part, being however, a zone of 230 by 80 miles, or about 18000 square miles, the density of population was upwards of 16 to the square mile. The settlements are slowly progressing inland.

History.—The first effective colonization of Maine was made by the English about 1635. The name was imposed by still earlier but transient settlers from France. The first charter was proprietary, and

granted in 1639 to Sir Ferdinand Gorges. In 1652 it was annexed to Massachusetts, under the title of county of Yorkshire. Maine remained virtually connected with Massachusetts, but the claims of the family of Gorges were urged, until quieted by purchase in 1676, and included in the same charter 1691. From the latter epoch to their final separation in 1820, the history of the two sections was blended. After some former abortive attempts to sever Maine and Massachusetts, leave was given by the latter to the freemen of the former in 1819, to decide the important question by vote. A large majority appearing to desire separation, a constitution was formed and adopted, and on the 3rd of March 1820, Maine assumed her rank as an independent state of the United States.

MARYLAND.

Boundaries, extent and position.—The Atlantic Ocean, Chesapeake bay and part of Virginia S. E., other parts of Virginia S., S. W. and W., Pennsylvania N., and Delaware E.

	Miles.
Beginning on the Atlantic Ocean on Fenwick's Island, thence due W. along Virginia to Ratclifl's Point on Chesapeake bay,	15
Along Pocomoke bay to Watkin's Point,	20
Over Chesapeake bay to the mouth of Potomac river,	20
Up Potomac river to Washington City,	120
Continuing up Potomac river to its extreme source,	200
Thence due N. to the southern boundary of Pennsylvania,	36
Thence due E. along N. lat. 39° 43′, and the south line of Pennsylvania,	200
Thence southward to the semicircle of twelve miles round New Castle,	5
Continuing S. along W. boundary of Delaware	86

	Miles.
Thence due E. along Delaware to the Atlantic Ocean,	36
Along the Atlantic Ocean to the place of beginning,	35
Entire outline,	773

The extreme southern part of Maryland, on the eastern shore of the Chesapeake bay, is usually considered as extending to lat. 38°, and is so laid down in most maps of the state; but by an original mistake in the line between Virginia and Maryland on the eastern shore, it runs about three miles N. of lat. 38. The state of Maryland therefore, lies between N. lat. 38° 03′ and 39° 42′, in lon. 2° E. and 2° 30′ W.

The area of Maryland is generally and greatly overrated. This exaggeration has arisen from its very irregular form, and from including the surface of Chesapeake bay. I have taken some extra trouble to obtain the true area by the rhumbs, and find that the land superficies is within an inconsiderable fraction of 10,000 square miles.

Natural Geography.—All those parts of Maryland, E. from Chesapeake, and W. from that bay to the head of tides, may be considered as recent alluvion. Above tide water, the surface rises, though not very rapidly, into hills, which reach the foot of the mountains. The third or mountainous section constitutes the western part of the state. In respect to the soil, much that is highly productive exists in each zone, but in general, the intermediate vallies of the mountainous part, contain the most productive. The limestone tracts of Frederick and Washington, exhibit a fertility not surpassed in the United States. The hilly or middle zone is very varied in respect to soil; in a very limited extent is frequently found the extremes of sterility and fertility. The sea sand and river alluvial section, though not affording any surface equally productive with the calcareous parts of the western, is more

uniform than the middle zone. The surface of the alluvial region, though not rising into hills of any considerable elevation, is far from being a dead plain.

In a state of nature, Maryland was with little exception covered with a dense forest, composed of a great variety of timber, the principal genera, oak, hickory, pine and the liriodendron tulipifera. The diversity of soil, and of relative elevation, superinduces in Maryland a very extended facility of vegetable production, from whence the staples have been greatly multiplied. The positive and relative climate may be seen by reference to tables 49, 50, 51 and 52, pages 387 to 391. From these elements, it is demonstrated, that cotton may be cultivated. From the ascents and descents stated in table 4, page 70, the height of the western vallies of the state is shewn to exceed 800 feet, an elevation equivalent to two degrees of latitude. The whole cultivateable surface of Frederick, Washington and Alleghany counties, may be regarded as lying more than 500 feet above the ocean tides; consequently, Maryland in respect to temperature extends through 2° 40′ of latitude.

The Appalachian system of mountains forms the western part of Maryland, and gives source to its most considerable river, the Potomac. The ridges or chains in traversing the state, rise into a barrier in no place less than 2486 feet, and in many places exceeding 3000 feet. This mountain mass, when compared with others even in the United States, is humble, but when viewed as opposed to the formation of canals or of roads, it swells into an object of stupendous magnitude, and particularly rises as a most formidable impediment to canal construction. An elevation of 2486 feet is more than equivalent to 6 degrees of latitude, and in winter gives to the mountain ridges of Maryland, a temperature similar to that on the Atlantic Ocean in lat. 45°.

Political Geography.—Annapolis the seat of government for Maryland, is situated on Severn river, a small confluent of Chesapeake bay, at N. lat. 39° 03′, long. 0° 33′ E. and 25 miles a little E. of south from Baltimore.

Though never the seat of legislation, Baltimore is the real capital of Maryland, and the third city in the United States in point of population and of commercial importance. Baltimore stands on a small bay at the mouth of Falls creek into Patapsco. About a mile below the city, the latter opens into a bay of from one to three miles wide, which extending to the S. E. 12 miles, is merged in the larger bay of Chesapeake. The harbour is a small but convenient basin, admitting vessels of 18 feet draught.

The city sweeps round the head of the bay, on both sides of Falls creek, stretching from east to west full three miles. The advance of this city has been commensurate with the advantages of its position. In 1790 it contained 13,503, in 1800, 26,514, in 1810, 35,583, and in 1820, 62,738 inhabitants. Thus in 30 years, the population augmented upwards of four fold. The existing numbers (Sept. 1828) no doubt exceed 80,000.

The other towns of the state worthy particular notice are, Easton on the eastern shore in Talbot county, Fredericktown in Frederick county, Hagerstown in Washington county, and Cumberland in Alleghany county

The great Baltimore and Ohio rail road, now in progress in Maryland, was in its original conception and prompt undertaking, a bold, and if successful, a most useful enterprise. It is intended to extend from Baltimore in a general westerly direction to the Ohio river, at some point below the mouth of Muskingum. It has been objected to this, as well other similar designs on a large or extended scale, that they were impracticable over great distances, but

it would seem if we regard the intermediate ground in this case, that the practicability would be more rationally apparent on the side of a permanent road than a canal. The length of the rail road will be between 330 and 380 miles, according to the point at which it will intersect Ohio river.

There is already a tolerably good line of turnpike road from Baltimore, intersecting or rather meeting the United States road at Cumberland.

For municipal and civil purposes, Maryland is subdivided into the counties of: *

Counties.	*Chief Towns.*	*Pop.* 1820.
Alleghany, *w.*	Cumberland	86
Ann Arundel, *m. w.*	Annapolis	27165
Baltimore, *n.*	BALTIMORE	96201
Calvert, *s. w.*	Prince Frederick	8072
Caroline, E. *e.*	Denton	10041
Charles, *s. w.*	Port Tobacco	16048
Cecil, E. *n. e.*	Elkton	16500
Dorchester, E. *s. e.*	Cambridge	17755
Frederick, *n. w.*	Frederick (city)	40459
Hartford, *n.*	Bellair	15924
Kent, E. *e.*	Chestertown	11453
Montgomery, *s. w.*	Rockville	16400
Prince Georges, *s. w.*	Upper Marlboro	20216
Queen Anne, E. *e.*	Centreville	14952
St. Mary's, *s. w.*	Leonardstown	12974
Somerset, E. *s. e.*	Princess Anne	19579
Talbot, E. *m.*	Easton	14389
Washington, *n. w.*	Hagerstown	23075
Worcester, E. *s. e.*	Snow Hill	17421
Total		407,350

Of the aggregate in 1820 there were whites, 260,222; free people of colour 39,730; and slaves 107,398.

* Those to which E. is annexed are on the Eastern shore.

Engaged in	Agriculture,	79,135
Do.	Manufactures,	18,640
Do.	Commerce,	4,771

Progressive Population.

1790	319,728	1810	380,546
1800	349,692	1820	407,350

Maryland abounds, in the mountainous sections, with iron ore and bituminous coal. The latter exists in immense strata near the United States road, a few miles west from Cumberland, and is of excellent quality. One great object of the Baltimore railway, is to produce an easy mode of conveying this invaluable fossil to the Atlantic coast. The western counties also contain limestone in immense formations or masses, one of which crosses the eastern side of Alleghany county, and is the extension of the great limestone range of the Kittatinny valley in Pennsylvania. The completion of the rail-road will tend to develope those inexhaustible fossil resources.

History.—Maryland was intended as a refuge to the persecuted Roman Catholics, under a charter or grant to George Calvert Lord Baltimore, who died before the deed was consummated and left his claims to his son Cecilius Lord Baltimore, to whom the patent was granted, June 29th, 1632. The vagueness of both proprietary patents, involved the two colonial proprietary families of Calvert and Penn, in a long and intricate dispute respecting the boundaries of Maryland and Pennsylvania, disputes which arose upwards of 50 years after the actual settlement of Maryland, and were not finally adjusted until after the middle of the 18th century.

In 1699 the seat of government was fixed at Annapolis, where it has ever since remained. This colony early and zealously joined and supported an opposition to the arbitrary proceedings of the British government. The constitution of this state was adopted August 14th, 1776, and dates next in order after Virginia.

MASSACHUSETTS.

Position, Boundaries, and Extent.—The Atlantic ocean N. E., E. and S. E., Rhode Island and Connecticut south, New York west, and Vermont and New Hampshire north.

	Miles.
Beginning on the Atlantic ocean three miles N. of the mouth of the Merrimac river, and thence following the inflexions of the coast to within three miles N. E. from Seconnet Point,	270
Thence along the eastern border of Rhode Island,	45
Thence W. along the northern boundary of Rhode Island,	24
Continuing W. along northern boundary of Connecticut,	83
Do W. to the S. W. angle of the state,	2
Thence N. N. E. along part of the eastern boundary of New York, to the southern boundary of Vermont,	50
Due E. along southern boundary of Vermont, to Connecticut river, and S. W. angle of New-Hampshire,	38
Thence along southern boundary of New Hampshire to the place of beginning,	85
Entire outline	597

The general length of Massachusetts, is not easily determined, but from Plymouth harbour on N. lat. 42° to the S. W. angle is about 145 miles; area 7335 square miles; of course the mean width is about 50 miles. Lying between lat. 41° 31′, and 42° 52′ N., and long. 3° 25′ and 6° 57′ E.

Natural Geography.—Massachusetts presents three distinct zones. The first towards the Atlantic ocean is a sea-sand alluvion, but little elevated above the ocean. The eastern plain is quickly and abruptly followed by a fine hilly tract, which crosses the state from north to south, and from which the rivers are poured in every direction. The second

or middle zone includes part of the beautiful valley of Connecticut, and is followed by the mountainous but highly fertile county of Berkshire, which comprises the whole western part of the state.

The eastern sandy border is the least fertile, but also the least extensive of the three sections. Within the sandy tract the country rises by so abrupt acclivity as to prevent the tides penetrating in any place but a few miles. It has been already noticed that the peninsula of Cape Cod, which forms the eastern part of this state, was the great dividing limit of the Atlantic tides, and that a very rapid increase of depth was found within the bay of Massachusetts.

Taken in one sweep of vision, the whole surface of this state, swells from the Atlantic counties to central hills, then depresses into the richly decorated valley of Connecticut, and again rises into the mountain vallies of Berkshire. The soil is as varied as the surface, presenting every quality from sterile sea sand, to river alluvion and calcareous debris, giving a very extended latitude to agricultural products. Westward from the first range of hills, the valleys possess a fine, deep, and strong soil; a soil improved by cultivation, to an extent equalled in few other sections of the United States.

The mineral productions of this state are numerous specifically, but iron is the only ore found in large quantities. Marble of beautiful variety and texture, is found in Berkshire. Granite of excellent quality as a building stone, is quarried at Teignmouth and Chelmsford, and brought to the sea coast by the Middlesex canal.

Massachusetts possesses eminent advantages as a commercial state. South-east from the Isthmus of Barnstable the tides are moderate, but within the Bay of Massachusetts, the harbours are numerous, deep, and spacious. Connecticut river traverses the central part of the state, from north to south, and

the Merrimac enters the ocean at its north-east angle. Both rivers have been made navigable far beyond the limits of Massachusetts, and the Merrimac connected with Boston harbour, by the Middlesex canal. In the article Canals under the head of the United States, it will be seen, that a canal is in progress to open the central county of Worcester to Narragansett bay by Blackstone river.

The climate of Massachusetts, from relative height, varies from east to west. The extremes differing only 1° 21′ in latitude, produces but a slight change of temperature, but the cultivated parts of the county of Berkshire rising to a height from 500 to 1000 feet, produces a marked difference of seasons, from those of the Hudson and Connecticut rivers on equal latitudes. I have seen the spring opening at Albany whilst snow covered the vales of Berkshire.

Political Geography.—Boston, the capital and principal city of Massachusetts, stands on a hilly peninsula, rising between the open bay and Charles river, at N. lat. 42° 22′, and long. 5° 58′ E. This fine city was founded in 1629. In 1800, it contained 24,937, in 1810, 32,250, and in 1820, 42,526 inhabitants. The advance gives an annual increase of 586, and if continued, yields, at the present time, a population of about 47,000.

The harbour of Boston is excellent, admitting vessels of any desirable draught of water; very seldom inaccessible from ice; and so narrow at the entrance as to be easily and effectually defended.

The city is completely united to the adjacent places by numerous bridges, and with the interior of New Hampshire by the Merrimac canal. Good roads extend to the other principal towns and villages of the state, Salem, Newburyport, Plymouth, Worcester, Northampton, Lenox, &c.

Massachusetts is subdivided into the following counties:

Counties.	*Chief Towns.*	*Pop.* 1820.
Barnstable, *s. e.*	Barnstable	24,029
Berkshire, *w.*	Lenox	35,727
Bristol, *s.*	Taunton	39,998
Dukes, *s.*	Edgartown	3,295
Essex, *n. e.*	Salem	74,580
Franklin, *n.*	Greenfield	29,289
Hamden, *s.*	Springfield	35,727
Hampshire, *m. w.*	Northampton	28,073
Middlesex, *n.*	Cambridge	61,677
Nantucket, *s.*	Nantucket	7,286
Norfolk, *m. e.*	Dedham	36,462
Plymouth, *e.*	Plymouth	38,112
Suffolk, *e.*	Boston	43,925
Worcester, *m.*	Worcester	73,605
Total		521,725

Of this aggregate, engaged in	Agriculture	63,460
Do	Manufactures	33,464
Do	Commerce	13,301

Progressive population.

1790	378,787
1800	422,845
1810	472,040
1820	521,725

History.—The first actual colonization of Massachusetts, was made at Plymouth in 1620, but the first charter was granted by James I. to a company as early as 1606, under the name of North Virginia. The Plymouth Company, however, commenced their settlement under a written constitution; supposed to be the first instance on record, of a government being formed from original elements by free consent of the governed, and reduced to the permanency of a written compact. The first regular house of representatives was organized in 1639. Massachusetts was formed by the oppressions, and

for the first 70 years of its existence, struggled against the arbitrary measures of the Stewart dynasty. In 1635, Charles I. interfered directly in the colonial government; and in 1638, a *quo warranto* was issued against the province. The revolution in 1642, gave a momentary respite, but with the restoration, 1660, the arbitrary folly of the Stewarts was again felt in America, and felt until 1688, when another revolution drove the oppressors from their abused power. In 1691, William and Mary granted a new charter, including Maine. From the latter period to that of the revolution in 1775, the colonial history of Massachusetts, though marked with many events of great local interest, yet affords few events worthy notice in a brief view. It may be truly said that this interesting colony was always a republic, and when the eventful day arrived, to meet the vengeance of the parent state, Massachusetts stood the first and severest shock from an irritated foe, and through the whole contest sustained the character with which it entered the list of opposition.

The government remained under the charter until March 2nd, 1780, when a constitution was adopted, which was amended for the last time in November, 1820; Maine had become a separate and independent state in the previous March. See Maine.

MICHIGAN.

Position, Boundaries, and Extent.—The peninsula of Michigan is bounded W. and N. W. by Lake Michigan, N. by the Straits of Michilimakinak, N. E. by Lake Huron, E. by St. Clair river, Lake St. Clair, Detroit river, and Lake Erie, S. E. by the state of Ohio, and S. W. by Indiana.

Beginning on Lake Michigan, where that lake is intersected by the northern boundary of Indiana,

	Miles.
thence along Michigan and Straits of Michilimakinak into Lake Huron,	260
On Lake Huron,	250
River St. Clair, Lake St. Clair, Detroit river, and Lake Erie, to the northern boundary of Ohio,	136
Along the north boundary of Ohio to the east boundary of Indiana,	80
Due N. along east boundary of Indiana,	10
Thence due W. along north boundary of Indiana to Lake Michigan and point of outset	110
Having an outline of	846

Extending from N. lat. 41° 35′, to N. lat. 45° 20′, and in long. from 5° 20′ to 9° 53′ W.; area 34,000 square miles.

The preceding is that tongue of land which stretches northward from Indiana and Ohio, and is particularly designated the Territory of Michigan; but for temporary purposes, the United States government has connected with the peninsula an immense region, improperly called the N. W. Territory, towards the sources of the Mississippi, and embraced within the following boundaries.

	Miles.
The Trans-Michigan part of the territory has an interior limit on the state of Illinois, along N. lat. 42° 30′,	210
Up the Mississippi to its source, and thence to the head of Red river branch of Assiniboin,	700
Down Red river to N. lat. 49°,	300
Along N. lat. 49° to the river Rain,	150
Up Rain river to its source,	150
Down Fox river to Lake Superior,	100
Along the N. W., W., and S. shores of Lake Superior, and St. Mary's river, to the Straits of Michilimakinak,	650
Along Green Bay and Lake Michigan,	350
Having an outline of	2610

This very extensive tract stretches from N. lat. 42° 30′ to 49°, and in long. from 9° to 22° W.

Area, 140,000 square miles, equal to 89,600,000 acres, to which if we add the peninsular part we have 174,000 square miles, or 111,360,000 acres.

From the N. E. angle of the state of Illinois to the N. W. angle of Trans-Michigan, the territory is 650 miles long. The breadth is very irregular, but averages about 200 miles.

Natural Geography.—The peninsular part is the only section on which any considerable settlements have been made, and is therefore the only part very correctly delineated. The outer margin on the lakes and rivers is one continued declining selvedge. This gently rising border is followed in the interior by an extended plain; the whole resting on secondary strata. From the flat, and in many places marshy interior, the numerous rivers ooze, gaining current in their advance towards their recipients, and are generally precipitated over falls before reaching their point of discharge. The Michigan cataracts are humble as to their elevation, and are occasioned by the outer projection of the underlaying strata.

In a state of nature, the peninsula of Michigan was covered, with partial exceptions, by a very heavy forest. The soil is deep and strong. The climate superinduces, when combined with the proximity to the extensive lakes of Huron, Michigan and Erie, the excessive growth of grasses, and of course the production of grain.

The actual elevation of the interior part above the lakes, has never been accurately determined, but may be assumed at from 100 to 300 at most, therefore but trifling change of temperature can arise from relative level. The winters are, however, long and severe. By reference to the tables under the head of climate, it will be seen that the extreme range of the thermometer at Fort Brady and Green Bay, evinces excessive vicissitudes of temperature.

That uniformity of surface, so remarkable on the peninsula, is in great part continued in the much more wide-spread Trans-Michigan region. Hills of some elevation do arise between the Mississippi river and lakes Michigan and Erie, but the general surface is level, and towards the sources of Mississippi and Red rivers, a dead and partially inundated flat presents itself.

The climate is here in a peculiar manner severe. This excessive cold is produced by a combination of causes. The surface of that part of the continent, from which the Mississippi draws its sources, is elevated above the Atlantic tides at least 1300 feet, or equivalent to four degrees of latitude; of course the north west part of Trans-Michigan, is exposed to a temperature equal to that of lat. 53° on the ocean. Again, this elevated region is exposed, utterly unsheltered, to the prevailing winds from that interminable table land stretching into the unknown regions of frost. To every other cause of an excess of winter cold on the plains of north-western Michigan, may be added the want of timber in many places of great extent.

The local features are yet so imperfectly explored as to preclude minute description, and except the highly picturesque shores of Lake Superior, a dull monotony prevails over what has been examined.

Political Geography.—Detroit, the capital of Michigan, stands on the right or western bank of Detroit river, 18 miles above its entrance into Lake Erie, at N. lat. 42° 25′, lon. 5° 50′ W. This city is yet small, population about 3000, but is the only town of any note yet built in North America, northwest from Buffalo. With a few villages in Canada, this vicinity is the centre of the out-post of civilization.

Settlements are extending, and military establishments have long existed at Green Bay, Michilimakinak, and Sault St. Mary. The latter was the last in

chronological order, and was formed by Col. Brady July 17th, 1822, and is the most advanced post of the United States to the N. W.

(The following list of Counties, N. W. Ter., is annexed to those of the north-west or Trans. Michigan Territory.)

Counties.	*Chief towns.*	*Pop.* 1820.
Brown, (N. W. Ter.)	Green Bay	952
Chippewa,(N.W.Ter.)	Sault de St. Marie	
Crawford, (N.W.Ter.)	Prairie de Chiens	492
Lapeer, *m. e.*		
Lenervie, *s. e.*	Tecumseh	
Macomb, *e.*	Mount Clemens	898
Michilimakinak	Mackinac	819
Monroe, *s. e.*	Monroe	1831
Oakland, *e.*	Pontiac	330
Saginaw, *m.*		
St. Clair, *e.*	St. Clair	
Sanilac, *e.*		
Shiawassee, *m.*		
Washtenaw, *s. e.*	Ann Arbour	
Wayne, *e. s.*	DETROIT	3574
Total		8896

Thus we are taught the appalling fact that in 1820, on 140,000 square miles, there existed only one civilized human being on 16 square miles. What a void on a space on which a distributive population of 10 to the square mile would yield an aggregate of 1,400,000 inhabitants! This is one of the many facts to show that the continent of North America is only commencing to be peopled.

History.—Detroit was founded about 1670, by the French, but remained a mere trading post, and in 1763, was ceded with other parts of Canada to the British government. It was included in the limits of the United States by the treaty of 1783, but not actually given up by the British until 1796. The terri-

tory of Michigan was formed in 1805. The city of Detroit and the adjacent territory was taken by a British army, August 1812, but retaken the ensuing year by the United States troops under Gen. Harrison; since which epoch the settlements have slowly and securely progressed. The population it is probable has more than doubled since the last census.

MISSISSIPPI.

Position, boundaries, and extent.—Tennessee N., Alabama E., Gulf of Mexico S. E., State of Louisiana S. W., and Mississippi river W.

	Miles.
Beginning at the mouth of Pearl river, and thence up that stream to N. lat. 31°	63
Thence due W. along Louisiana, to the left bank of Mississippi river,	105
Up Mississippi river, to the S. W. corner of the state of Tennessee,	530
Thence due E. along N. lat. 35°, and the southern boundary of Tennessee,	90
Thence southwardly along the western boundary of Alabama to the Gulf of Mexico,	320
Along the shores of the Gulf of Mexico to the mouth of Pearl river,	80
Having an entire outline of	1185

Extending from N. lat. 30° 08′, to N. lat. 35°, and in long. from 11° 05′ to 14° 26′ W.

Length from north to south, 338 miles. The area of this state has never been very accurately determined. Measured by the rhumbs on Tanner's map, it comprises a small fraction above 51,000 square miles, with a mean width of 150 miles; equal to 32,640,000 acres.

Natural Geography.—So much has already been said of the rivers of the United States, that a brief notice of them is only necessary under the respective

heads of the individual states. The state of Mississippi is washed on its western border by the Mississippi; the Tennessee river touches the N. E. angle, and the sources of Tombeckbee, Pascagoula, Pearl, Amite, Homochitto, and Yazoo, drain the interior sections.

Rejecting the islands of the Gulf of Mexico, as too inconsiderable for notice, the soil of Mississippi is divisible into three very distinct portions. First, the alluvial borders of the rivers; second, the bluffs adjacent to the Mississippi overflow; and third, pine forest land. The flat margin of the Mississippi on the left or east bank, though equally fertile, is less valuable than similar soil on the opposing side. This difference is produced by the bluffs, or hills of the state of Mississippi, confining the surplus water, and consequently subjecting the river border lands to more frequent and more durable inundation, than takes place on the west side where the waters are freely drained into the remote swamps and outlets.

Rising from the Mississippi alluvion, the bluffs are followed by a very waving, but a most productive country. This band or zone, commences in Louisiana, as low down as Iberville, and with the mere interruptions of the streams stretches into Tennessee, with a greater or less width from 10 to 30 or 40 miles. It may be doubted, whether, every thing considered, the bluff zone of Mississippi is exceeded in intrinsic value by any other tract in the United States. In its natural state, and so in great part it still continues, this region was covered with a heavy forest, of which generically oak, hickory, laurel, magnolia, sweet gum, ash, maple, liriodendron tulipifera, and pine, were most prevalent, with a great variety of vines and underwood.

In the primitive settlements near Natchez, tobacco, indigo, and cotton, have been successively staples, and all produced luxuriantly. The latter vegetable has prevailed within the last 30 years.

Small grain could no doubt be plentifully cultivated, but the only species of cerealia much attended to is Indian corn. Meadows and orchards are neglected, although the climate and soil invite the fostering of both those pursuits of agriculture. The peach and fig are, however, abundant. Gardens are when duly managed extremely productive ; but horticulture, like meadows and orchards, is neglected.

Much of excellent land exists along the streams over the whole state, and when brought under cultivation, productive in similar vegetables with the bluff lands I have noticed.

The pine forest, and other interval land, of various but inferior quality, constitute much the greater part of the surface of the state, and will preclude a dense population except in detached places, unless objects of culture can be introduced suitable to the now useless soils. Will not the vitis vinifera supply this desideratum ?

The metallic productions of this state deserve no particular notice.

What has been said in respect to climate under the head of Alabama, may be repeated with regard to the state of Mississippi, except, that being more exposed to the winds of the N. W. the temperature of the latter is lower than that of the former in winter. Neither sugar cane nor the orange can be cultivated above lat. 31°, nor even below that curve to any advantage in the state of Mississippi. The winters are very unequal in point of temperature, and often severe in the vicinity of Natchez. Snow, more or less, occurs annually, and the thermometer has shown a depression of the mercury to 12° above zero.

Political Geography.—Natchez is not the seat of government, but is by far the most important town of the state. It is situated on a series of hills, about half a mile from the bank of the Mississippi, N. lat. 31° 33′, and long. 14° 30′ W. The site of the town

is waving, and though so near is not visible from the Mississippi, above which it is elevated about 100 feet, with a steep intervening bluff. Population, 1810, was 1511, and in 1820 had risen to 2184. There is certainly no other town in the United States the real importance of which so greatly exceeds the extent of its buildings or number of inhabitants. In common years from 30 to 40 thousand bales of cotton are exported from this city, and the commercial business carried on is on an equally large scale.

Washington, six miles E. from Natchez, is a pleasant, but inconsiderable place; and a similar remark as to size applies to every other village of the state, including Jackson, the seat of government.

The most improved and best populated section of this state is the S. W. angle. It was here that the original colonization was made, and where exists the most extensive continuous body of productive soil. Settlements are extending into the south-eastern and central parts; the northern remains in possession of the Choctaw and Chickasaw Indians.

Counties.	*Chief towns.*	*Pop.* 1820.
Adams, *w. s.*	Natchez	12,073
Amite, *s. w.*	Liberty	6853
Claiborne, *w.*	Port Gibson	5963
Copiah, *m. e.*	Gallatin	
Covington, *m. s.*	Williamsburg	2230
Franklin, *s. w.*	Meadville	3821
Greene, *e. s.*	Greene C. H.	1445
Hancock, *s.*	Shieldsboro	1594
Hinds, *w.*	JACKSON	
Jackson, *s. e.*	Jackson C. H.	1682
Jefferson, *w. s.*	Fayette	6822
Jones, *m. s.*	Ellisville	
Lawrence, *m. s.*	Monticello	4916
Madison, *e.*	Madisonville	
Marion, *s.*	Columbia	3116
Monroe, *e. n.*	Hamilton	2721
Perry, *s. e.*	Augusta	2037

Counties.	*Chief towns.*	*Pop.* 1820.
Pike, *s.*	Holmesville	4438
Rankin, *w.*	Yazoo	
Simpson, *m. s.*	Westville	
Warren, *w.*	Vicksburgh	2693
Washington, *m. s.*	New Mexico	
Wayne, *e.*	Winchester	3323
Wilkinson, *s. w.*	Woodville	9718
Yazoo, *w.*	Benton	
Total,		75,448

Of these, engaged in	Agriculture	22,033
do.	Manufactures	650
do.	Commerce	294

History.—The first actual settlement of whites was made by the French at Natchez about 1716 or 1718. This colony, amounting to about 500 persons, was massacred by the Indians in 1729. White establishments were partially renewed, but the country remained in great part a wilderness until after 1763, when the whole of Florida was ceded to the British. The country as high as the Yazoo river was, soon after, surveyed, and very respectable settlements formed along the fine bluff region above and below Natchez. As far as lat. 31° was included in the limits of the United States by the treaty of 1783, but being overrun by the Spaniards in the revolutionary war, it remained in their possession until 1798. In 1800, all that is now comprised in Mississippi and Alabama, was formed into a territory by the name of Mississippi territory. March 1st, 1817, the western part was authorised by act of Congress, to form a constitution, which was done in convention, the ensuing July, and in December, 1817, Mississippi became a state of the United States.

MISSOURI.

Position, boundaries, and extent.—Bounded N. E. and S. E. by the Mississippi river, S. by the territory of Arkansas, and W. and N. by the Western unappropriated territory of the United States.

	Miles.
Beginning on the Mississippi, at the mouth of Lemoine river, and thence down the former to N. lat. 36°	550
Thence due W. to the right bank of St. Francis river	50
Down St. Francis to N. lat. 36° 30′	50
Thence due W. along the northern boundary of Arkansas to a point where a meridian line from the junction of Missouri and Kansas rivers intersects N. lat. 36° 30′	200
Thence due N. to a point where a line extended due W. from the Sac village, on Lemoine river, will intersect the western boundary	273
Thence due E. to the Lemoine river	130
Down Lemoine river to the place of outset	20
Having an entire outline of	1273

Mean length from N. to S. 280 miles, area rather exceeding 63,000 square miles; but adopting that superficies, the mean width, E. and W., will be 225 miles; the whole containing 40,320,000 acres. Extending from N. lat. 36° to 40° 36′, and in long. from 11° 47′ to 17° 32′ W.

Natural Geography.—Though, with the exception of the alluvial bottoms of the rivers, Missouri is rolling or hilly, yet no part rises to an elevation deserving the name of mountains. A chain of hills commences south-east from the mouth of Osage river, and stretching south-west is the incipient beginning of the Ozark or Masserne chain, but remains humble until far within Arkansas. No other state of the United States is, however, so greatly diversified in respect to soil and external features. The prairie region, commencing in Ohio and Indiana, spreading into immense plains in Illinois, expands still more in western Missouri.

To a civilized and commercial people, rivers are, of all objects in nature, the most important. In most places the far greater part of the most fertile and most easily cultivated soil is on the banks of rivers; where also rise the most extensive and wealthy cities. In regard to rivers there is perhaps no other equal section of the earth to compare with Missouri. The Mississippi sweeps its mighty volume along the eastern border 550 miles, receiving, near mid-distant, the still more majestic Missouri. The latter entering the western boundary traverses the state, receiving from each side tributaries which, if not contrasted with the overwhelming mass into which they are poured and lost, would deserve the title of fine rivers. The Osage, rising in the angle between Arkansas and Kansas rivers, on the vast plains west from the state of Missouri, carries its very serpentine but navigable volume into Missouri river near the centre of the state.

Illinois and Ohio, though not within, are in a commercial point of view rivers of Missouri. The White and St. Francis rise in this state, and flowing southward connect it with Arkansas.

The soil is as varied as is the surface; every quality is found from the most productive and exhaustless alluvion to sterile clay or silicious sand. On the eastern border, and near the streams generally, a dense forest covered Missouri; but even here, in some places, naked prairie encroaches upon the streams. I may here apprize the reader that there is a strong pre-disposition in the mind to exaggerate the comparative extent of prairie over woodland. Entering on a prairie where the view is in one or more directions limited only by the horizon, an idea of vastness is involuntary. I have seen in public documents, respecting Louisiana, the prairie estimated at two-thirds of the whole surface; whilst, in fact, much more than nine-tenths of the surface is at this moment under a dense untouched forest.

It is from a knowledge of this natural propensity, that I am incredulous when I either read or hear comparisons made between the extent of prairie and forest. It is from this natural cause that the breadth of rivers, distances at sea, and the comparative quantity of cleared land in a cultivated country, are almost invariably over-rated.

Missouri is divisible into three sections in regard to soil. In general terms the south-east section is alluvial, and liable to partial annual inundation; the south-western is mixed prairie and "Flint Hill" land. The northern section, west from the Mississippi, and north from the Missouri, says Mr. Flint, "is no where mountainous. It contains great tracts of alluvial and hilly prairies. It is for the most part a surface delightfully rolling and variegated. There is no part of the globe where greater extents of country can be traversed more easily, and in any direction, by carriages of any description, where there are no roads, and that is yet in a state of nature."*

These three portions have each their appropriate features, but each are interspersed with minor tracts partaking of the general character of the others. According to Mr. Flint there is a specific difference between the alluvion of the two great rivers Mississippi and Missouri; the bottoms of Missouri being more loamy and sandy, and those of its rival more clayey, and yet more substantial. The whole state will, indeed, with no very great exceptions, support a dense population. The geographical extent of the state, and the very great diversity of soil, will admit a correspondent variety of vegetable production. Wheat and Indian corn have been from the original settlement the staples, though in the S. E. section cotton is produced.

Agriculture in all its forms, either as an art or a science, is in its infancy in Missouri, as it may be considered in any newly settled country where nature has done too much. If we return, however, to

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* Flint's Western States, Vol. ii. p. 64.

that very essential element the climate, we shall find that Missouri rises above the region of cotton. Enough has been given in this View to decide the severity and length of winter in Missouri. Three winters in five the Mississippi becomes passable on the ice at St. Louis. In 1818, it was so for upwards of two months. It is in this state that the frigid winds of the N. W. are first experienced in all their force receding from the Atlantic. The climate is in brief, cold and windy, as well as dry and bracing. The successive years also vary exceedingly, and uncertain as are the revolutions in meteorology elsewhere, they are proverbially variant in the state of Missouri and adjacent regions.

The indigenous forest trees of Missouri are specifically the same found in the middle region of the Mississippi basin generally, but with perhaps greater variety on a given spot, and the Juglans peccan, and some other trees rarely found east of the Mississippi river.

This state has become in an especial manner noted for immense deposits of lead ore, chiefly of the species called Galena. The principal lead region is in Washington county and parts adjacent, extending about 30 by 15 miles. The central part about 70 miles S. W. from St. Louis. Detached bodies of ore are found from White to Missouri river. The ore is found merely imbedded in masses, and evidently a deposit. None has yet been found *in situ,* though some of the diggings have reached to 80 feet.

Coal in immense strata also exists in Missouri, and at some future period must greatly exceed in value the lead mines. In a country of intense winter and and scarcity of wood, coal mines must be a resource of most primary importance.

Iron ore forms no inconsiderable part of the entire mass of many of the hills of Missouri, but as this invaluable mineral is found almost every where, its

existence here, though highly advantageous, gives but little local preference.

With all its resources combined, Missouri is a truly desirable section of the United States, and what may at the first glance create astonishment in many minds, it will be the most central state of the Union, when the entire basin of Mississippi is peopled, and subdivided into organized states.

Political Geography.—St. Louis has ceased to be the seat of legislation, but continues the real commercial capital of the state. This city stands on an alluvial deposit, rising by a gentle acclivity from the water, the whole resting on a mass of secondary limestone, which, forming at this place the bank of the Mississippi, seems to underlay that stream. The buildings extend from the margin of the river to the brow of the bank, beyond which the country extends in level and mostly open prairie. The main streets are nearly parallel to the river and one stretches about a mile in length. This city dates back to 1764, but previous to its becoming a town of the United States its progress was very slow. In 1803, when it passed under the authority of the United States, the population fell short of 1000; in 1816 the inhabitants amounted to 2000; in 1820 they had increased to 4598, and at this epoch, 1828, cannot fall much, if any, short of 10,000. It is with every limitation, next to New Orleans, the largest city on the margin of the Mississippi. Lat. 38° 46′ N., long. 12° 58′ W.

After St. Louis, the principal towns of Missouri are St. Genevieve with about 1500 inhabitants, Jackson with 500, Herculaneum 500, St. Charles 1200, Franklin 1200, and Jefferson on the south side of Missouri about 20 miles above the influx of Osage, and now the seat of government of the state.

Counties.	*Chief towns.*	*Pop.* 1820.
Boone, *m.*	Columbia	5963
Callaway, *m.*	Fulton	

Counties.	*Chief Towns.*	*Pop.* 1820.
Cape Girardeau, *e. s.*	Jackson	
Chariton, *n.*	Chariton	
Clay, *n. w.*	Liberty	
Cole, *m.*	Marion	
Cooper, *m. w.*	Boonsville	6959
Franklin, *m. e.*	Union	2379
Gasconade, *m.*		
Howard, *m. w.*	Fayette	13426
Jefferson, *e.*	Herculaneum	1835
Jackson, *m. s.*	Independence	
Lafayette, *w.*	Lexington Hill	
Lincoln, *e.*	Alexandria	1662
Madison, *s. e.*	Fredericktown	2047
Marion, *e. n.*	Palmyra	
Montgomery, *m. e.*	Lewistown	4075
New Madrid, *s. e.*	New Madrid	2296
Perry, *e. s.*	Perryville	
Pike, *e. n.*	Bowling Green	3747
Ralls, *n. e.*	New London	
Ray, *n. w.*	Richmond	
Saint Charles, *e.*	St. Charles	3970
Saint Francis, *e.*	Farmington	
St. Genevieve, *e.*	St. Genevieve	4962
St. Louis, *e.*	St. Louis	10049
Saline, *m. w.*	Walnut Farm	
Scott, *s. e.*	Benton	
Washington, *e.*	Potosi	2769
Wayne, *s.*	Greenville	1443
Total		66,586

Of these, were whites 55,988; free persons of colour 376; and slaves 10,222.

Engaged in	Agriculture	13,559
Do	Manufactures	1,887
Do	Commerce	480

History.—Though discovered by the French about 1674, the first civilized settlements were not made in Missouri until after the treaty of Paris,

1763. The first establishments were formed at Genevieve, under a mining company, "Pierre La Clade, Maxan, & Co." St. Louis was founded 1764, and St. Charles, on Missouri, in 1780, but previous to the cession to the United States the Missouri settlements languished. In 1803 the salutary revolution was effected, and in 1804, by the separation of the territory of Orleans, now Louisiana, Missouri became a territory. After some abortive attempts, arising from the question whether slavery be admitted or not, Missouri was, at the session of Congress 1819—20, authorised to form a constitution, under certain conditions; the constitution was formed, and conditions being complied with, on August 10th, 1821, Missouri became a state of the United States.

NEW-HAMPSHIRE.

Position, boundaries, and extent.—Atlantic ocean S. E.; Massachusetts S.; Vermont W.; Canada N., and Maine E.

	Miles.
This state merely touches and is washed by the Atlantic ocean	20
Thence along N. boundary of Massachusetts	80
Up Connecticut river, opposite Vermont	170
The boundary between New-Hampshire and Lower Canada remains unfixed, but is about	50
In common with Maine to the mouth of the Piscataqua river into the Atlantic ocean	150
Having an entire outline of	470

Extending from N. lat. 42° 41′ to 45° 11′, and in long. from 4° 22′ to 6° 09′ E.

The mean length of New-Hampshire is very nearly that of its difference of lat. 2½ degrees, or about

174 statute miles; area 8700 square miles, and mean breadth 50 miles.

Natural Geography.—This state on a narrow extent differs more in relative elevation than any other state of the Union, and of course the mean and extreme temperature are in correspondent excess. The Atlantic border is generally a sandy beach, but followed by so rapid a rise in the surface of the interior country as to arrest the tides within 20 miles from the ocean. The mountains of the state are central with a zone of finely diversified hill and dale country around. Grand Monadnoc rises to an elevation of 3254; Moosehillock to 4636; but some of the summits of White Mountains approach or attain to 7300, and are considerably the most elevated mountain masses of the Appalachian system.

As a whole the physiognomy of New-Hampshire is bold, prominent, and often sublime. Amid a very rugged exterior, this state possesses comparatively, its full share of productive soil. The mountains and hills abound in majestic timber, together with mineral treasures, particularly iron. Those resources are rendered available by the Connecticut, and more particularly the Merrimac river. By the latter and the Middlesex canal the harbour of Boston is open to the centre of the state.

New-Hampshire is a country of grain, fruits, pasturage and lumber. Here we reach the complete region of luxuriant meadow grass. The winters are however long, and with an Alpine severity of temperature. The thermometer at Keene in the south-western part of the state, has sunk to 24 below zero.

Political Geography.—The seat of government for this state is Concord, a town of secondary commercial importance, in Merrimac county. It stands on the right bank of Merrimac river, at N. lat. 43° 12′, long. 5° 30′ E. The population of the township 1820, 2830.

The commercial capital of the state is Portsmouth, situated on the south bank of Piscataqua river, about 3 miles from the open Atlantic ocean. The harbour is proverbially excellent, and from the excessive tides very seldom impeded and never altogether closed by ice. The main entrance has from 8 to 10 fathoms, of course admits vessels of the largest class of commerce or war. N. lat. 43° 04′, lon. 6° 13′ E.

The other towns will be found following their respective counties.

Counties.	*Chief towns.*	*Pop.* 1820.
Cheshire, *s. w.*	Keene	45,276
Coos, *n.*	Lancaster	5,549
Grafton, *w.*	Haverhill, Plymouth,	32,989
Hillsborough, *s.*	Amherst	53,884
Merrimac, *m.*	CONCORD	
Rockingham, *s. e.*	Portsmouth, Exeter	55,246
Stafford, *e.*	Dover, and Guilford	51,146
Sullivan, *w.*	Newport	
Total		244,155

Of the foregoing aggregate, engaged in

Agriculture	52,385
Manufactures	8,699
Commerce	1,088

Population to the square mile 30.

History.—The original settlement of New-Hampshire under the far more elegant name Laconia, was made under a proprietary grant to John Mason, 1621. In 1622 a second grant was made to Mason and Sir Ferdinand Gorges. To this latter conflicting grant New-Hampshire stands indebted for her separate existence. In 1623, the first attempt was made at the formation of a regular establishment

near the Piscataqua. The colonization was, however, confused and slow, the Massachusetts colony claimed a part of the country, and to superinduce still more intricacy, the Indians in 1629, were prevailed on to make what was known as "Wheelwright's Grant," and in the same year Mason obtained from the Plymouth company a new grant, to which for the first time the name of New-Hampshire was given. Misery and misgovernment were the fruits of these opposing grants, and forced the inhabitants under the protection of Massachusetts in 1640. The two colonies continued connected until 1679, when New-Hampshire in consequence of the claims of the Mason family, was made a royal government with a house of assembly chosen by the people. The vexatious claims of the representatives of Mason continued to distract the province until 1747, when they were quieted for ever by purchase. But troublesome as they were, it is more than probable, had Massachusetts done with the heirs of Mason in New-Hampshire, what it did with those of Gorges in Maine, that New-Hampshire would have remained an integral of Massachusetts.

Except distressing wars with the savages, the history of New-Hampshire continued unproductive of many events of historic importance. One of the first legislative attempts at entire separation from Great Britain was made in New-Hampshire, in the June previous to the declaration of independence, 1775. A temporary constitution was formed, and this state sustained its full share in the dangers, glory, and fruits of the revolution. The existing constitution was adopted on the second Wednesday of February, 1792. Since the latter epoch the advance of this state has been steady, calm and prosperous. The existing population it is probable considerably exceeds 270,000.

NEW-JERSEY.

Position, boundaries and extent.—Bounded by the Atlantic ocean E. and S. E.; Delaware bay S. W.; Pennsylvania W.; and New-York N., and N. E.

	Miles.
New-Jersey has a boundary on the Atlantic ocean from Cape May to Sandy Hook	120
An interior limit opposite New-York, along Raritan bay, Staten Island Sound, New-York bay, and Hudson river	60
In common with New-York from Hudson to Delaware river	45
Thence down Delaware river and bay to Cape May	220
Having an entire outline of	445

Extending from N. lat. 38° 55′ to 41° 21′, and in long. from 1° 28′ to 3° 06′.* Extreme length is directly from south to north 170 miles. Area 7870 square miles; mean breadth 46 miles.

Natural Geography.—New-Jersey presents three very marked divisions of soil; first, sea-sand alluvion; second, hilly or middle section; and thirdly, the mountainous or northern section.

The first or sea-sand alluvion occupies nearly one half the area of the state. A line from the mouth of Shrewsbury river to Bordentown, will very nearly separate the sea sand alluvial from the hilly tract. Between this natural limit and the continuation of the Blue Ridge, New-Jersey is delightfully variegated by rich and bold scenery. This hilly region contains the counties of Middlesex, Hunterdon, Somerset, Essex, Morris, and Bergen. This fine section is also decorated by several mountain ridges, but the true mountain portion of New-Jersey is the extreme northern part of the state, composed of the counties of Warren and Sussex.

* Gordon's map of N. Jersey.

The descent from the mountain to the hilly region is not by gentle declivity but abrupt like the steps of a stair. The relative elevation of the different sections, has not been very accurately determined, but the higher vallies of Sussex county must be from 800 to 1000 feet above tide water. I have myself been witness to the destructive effects of early frost at Newtown in Sussex county, whilst no symptom of such a phenomenon appeared in the vicinity of Somerville, in a difference of almost half a degree of latitude.

Declining from north to south, difference of latitude and level co-operate in New-Jersey, and in a difference less than 2½ degrees of the former a very remarkable change of climate is perceptible. The level sandy plains of the southern extreme approximate to the temperature of eastern Virginia, and admit the cultivation of cotton, whilst the seasons of Warren and Sussex counties resemble those of Vermont and New-Hampshire.

This state, rich in iron ore and so much diversified in soil and climate, abounds in a great variety of staples. It has the two large and increasing cities of New-York and Philadelphia on her borders. The staples of New-Jersey are composed of every product of her woods, mines, fields, fisheries and manufactories. Taken in every respect, it may be doubted whether this state is not the most advantageously situated of any political subdivision of the United States. The peculiar local facilities by rivers and canals may be seen by reference to the physical notices in Chap. V., and under the head of canals in Chap. XII.

Political Geography.—The principal cities or towns of New-Jersey, as elsewhere on the Atlantic slope, have risen on the margin of the primitive and head of the tides. Trenton, Princeton, New-Brunswick, Somerville, Elizabethtown and Newark, are ranged from the lower falls of Delaware at Trenton,

towards the first great breach in the primitive rocks at New-York.

Trenton the seat of legislation for the state, and seat of justice of Hunterdon county, stands on the left bank of Delaware river, above the influx of Assanpink creek, and at the head of the tide, 30 miles N.E. from Philadelphia; N. lat. 40° 13′, long. 2° 19′ E. Pop. 1820, 3942.

Though dignified by the name of capital, Trenton does not contain much above one half the population or wealth of either New-Brunswick or Newark. The former stands on the right bank of the Raritan river, on the line between Middlesex and Somerset counties, and at the head of the tide. Pop. 1820, 6764. Newark is situated on an alluvial plain on the right bank of Passaick river, and 9 miles directly W. from the city of New-York, N. lat. 40° 44′, long. 2° 50′ E. Pop. 1820, 6507.

Counties.	*Chief towns.*	*Pop.* 1820.
Bergen, *n. e.*	Hackensack	18,178
Burlington, *m. s.*	Mount Holly	28,822
Cape May, *extreme s.*	Cape May C. H.	4,265
Cumberland, *s.*	Bridgetown	12,668
Essex, *m. e.*	Newark Elizabethtown	30,793
Gloucester, *s.*	Woodbury	23,089
Hunterdon, *w.*	TRENTON	28,604
Middlesex, *m. e.*	New-Brunswick	21,407
Monmouth, *e.*	Freehold	25,038
Morris, *m. n.*	Morristown	21,368
Salem, *s. w.*	Salem	14,022
Somerset, *m.*	Somerville	16,506
Sussex, *extreme n.* Warren, *n. e.*	Newtown Belvidere	32,752
Total		277,575

Of this aggregate were whites, 257,558; free coloured persons, 12,460; and slaves, 7,557. Population to the square mile 35.

In 1820, were engaged in	Agriculture	40,812
do.	Manufactures	15,941
do.	Commerce	1,830

Progressive Population.

In 1790	184,139	In 1810	245,560
1800	211,149	1820	277,575

This advance, evinces a general increment of about 13 per cent. in the two last decennial periods, and if continued, the existing population is about 300,000, and will be in 1830, 314,000 nearly.

History.—The first settlement of New-Jersey, was nearly cotemporary with that of New-York, and by the same nation, the Dutch, who first seated themselves on and near the mouth of the Hudson about 1612. The lower parts on Delaware bay were settled partially by the Swedes, 1628. The Dutch claimed and possessed themselves of the whole, which they held until supplanted by the English in 1664. Under the English it was made a proprietary government, being granted by Charles II. to his brother James, duke of York, afterwards James II. Most happily for the prosperity of the colony it soon passed to more enlightened proprietors. The grant was in 1664 made to the duke of York, who in the same year sold his rights to Lord Berkely, and Sir George Carteret, under the name of New-Jersey. The liberal and manly policy of the new proprietors, was shewn in the establishment of representative government, and in the easy mode of conveyance and secure tenure of landed property, and also in the maintenance of strict justice towards the Indians. This happy outset was marred by the momentary conquest of the country by the Dutch, and on their expulsion, by the re-establishment, 1674, of the authority of the duke of York. In that year Lord Berkely assigned his undivided moiety of New-Jersey to William Penn, and three others. To avoid the inconvenience of joint ownership Carteret retain-

ed East Jersey, and released the western to Penn and his associates. After some years of very unpleasant controversy, the authority of the duke of York ceased in 1680, a year rendered memorable also by the arrival in the province of the first large body of Quakers, who settled and built Burlington and Salem.

In 1682, the whole province passed under the jurisdiction of Penn and his associates, but the ruinous and every where distressing interference of the infatuated Stuarts, and the claims to jurisdiction made by New-York, operated to retard the prosperity of New-Jersey. These evils were not removed, though mitigated, until 1702, when the two fragments were re-united, and peace, order, and security followed. This salutary change was effected by making the province a royal government, but it was not until 1738, that New-Jersey was ruled by a separate govnor from that of New-York.

In the revolutionary struggle, and in the incipient resistance to the oppressive measures of Great Britain, New-Jersey bore her full share, and in the hardships and privations of an eight years war no other colony of the confederacy, it is probable, suffered so much. Her devotion to the cause of freedom is fully recorded in the date of her constitution, July 2nd, 1776, two days before the Declaration of Independence by the Continental Congress.

NEW YORK.

Boundaries, extent, and position.—Bounded S. E. by the Atlantic Ocean, S. by new Jersey and Pennsylvania, W. by Pennsylvania, Lake Erie and Niagara river, N. W. by Lake Ontario and St. Lawrence river, N. by Lower Canada, and E by Vermont, Massachusetts and Connecticut.

Miles.

Beginning on the right bank of Hudson river almost exactly on N. lat 41°, and thence along the

N. E. boundary of New Jersey to Delaware river,	45
Up Delaware river opposite Pennsylvania to N. lat. 42°.	65
Thence W. along the N. boundary of Pennsylvania,	225
Thence N. to the shore of Lake Erie,	19
Along lake Erie to the outlet by Niagara river,	66
Down Niagara river to lake Ontario,	35
Along the southern and eastern shores of lake Ontario to St. Lawrence river,	200
Down St. Lawrence river to N. lat. 45°,	100
Up N. lat. 45° to lake Champlain,	65
Along and up lake Champlain to the influx of Poultney river,	105
Up Poultney river opposite Vermont,	10
Along W. boundary of Vermont,	54
Thence E. along S. boundary of Vermont,	3
Thence southward along W. boundary of Massachusetts,	50
Thence E. along S. boundary of Massachusetts,	2
Thence along W. boundary of Connecticut to Long Island Sound, at the mouth of Byram river,	81
From Matinicock Point on Long Island opposite the mouth of Byram river, to Montaug Point,	100
Thence westward along Long Island and Staten Island to the point of outset,	130
Having an entire outline	1355

Extending from N. lat. 40° 30′ to 45°, and lon. from 5° 08′ E. to 2° 48′ W. Length from Staten Island, S. W. point, to lat. 45°, 315 miles, and from the S. W. angle of Massachusetts along N. lat. 42°, 320 miles. Measured by the rhumbs, the area is within a small fraction of 46,500 square miles, and the mean breadth consequently, 110 miles very nearly.

Natural Geography.—Embracing 4½° of lat. and presenting a great diversity of soil and difference of relative level, New York has a climate with strongly marked extremes. The general features and structure of this state have been so minutely noticed

in Chap. V. that little need be added in this place. It is sufficient to observe, that with very little exception, the physiognomy of New York is broken by hills and mountains traversed in such manner by rivers, and stretching from the Atlantic ocean to the Canadian sea, as to confer upon the whole a peculiar geographical character. Under the physical survey in Chap. V. have been brought to view the two great depressions in the Appalachian system by which the Erie and Champlain canals have been traced into the vast St. Lawrence basin. These depressions and the respective character of the rivers and lakes, constituted a combination of natural advantages, which talent, wealth and political security have as remarkably combined to render efficient.

It would be vain to attempt an enumeration of the staples of New York, as these staples are composed of every article of domestic production, which the lines of lat. above 40° will admit. Of mineral substances afforded within the state, the most important are salt, iron, gypsum and marble, but these four are merely the most prominent, and the list might be augmented by the addition of water-lime.

Political Geography.—The city of New York, though not even the seat of legislation for the state, is in many essential respects, the commercial capital of the United States. This already great emporium stands on the southern point of Manhattan Island, 18 miles above the open Atlantic Ocean, with the mouth of Hudson W., East river or the outlet of Long Island sound E., and a most beautiful bay to the S. The Battery or southern part of New York, is at N. lat. 40° 42′, almost 3° E. from Washington City. If we include the small strait called the Kills, extending westward of Staten Island into Newark bay, the harbour of New York has four outlets. The variety of tide currents prevent the accumulation of ice, and though when compared with the

tides N. E. from the isthmus of Barnstable, those of New York are moderate, yet from the causes stated, the entrance is seldom rendered inaccessible by frost. The depth of water admits vessels of large, though not of the very greatest draught, whilst the narrowness of all the channels permits the erection of defensive works, so as to render New York in a very eminent degree secure.

As an object of taste the entire neighborhood of this city is truly worthy of admiration. The variety of surface of land and water, the activity apparent on all sides, and the monuments of art and nature brought here to a narrow circle, amply reward the traveller, and few, very few of those who really visit the place as travellers, see the most alluring points of the picture.

The population of New York was found in 1820 to amount to 123,706, which was then rapidly increasing, as may be seen by the subjoined tabular view of the progressive population.

1697	4,302	1805	75,770
1756	13,040	1810	96,373
1790	33,131	1820	123,706
1800	60,489	1825	166,086

From these elements we are taught that New York more than doubled from 1805 to 1825, or in 20 years. It is probable that for a century to come this city will double its population each 25 years, and if so, the aggregate will be in

1850	332,172	1900	1,328,688
1875	664,344	1925	2,657,376

Next to New York in population is Albany, the seat of legislation. This city stands on the right bank of the Hudson, at N. lat. 42° 39′, and long. 3° 15′ E. The site is an inclined plain of bold acclivity, the streets extending either parallel to the Hudson or nearly at right angles to that stream.

Pop. 1820, 12,867. The tides ascend to Troy, 5 miles above Albany, to which place a sloop navigation also extends.

Troy is built upon an alluvial plain, and is the only town on the Hudson of any considerable size so situated. It stands on the contrary side from Albany, 4 miles below the junction of the Mohawk and Hudson. Population of Troy in 1820, 5,264.

The city of Hudson on the Hudson river, 30 miles below Albany, but on the opposite side of the river, occupies a bold acclivity from the water, the main street extending nearly at right angles to the river. The latter in extent and population is very nearly equal to Troy, having in 1820, 5310 inhabitants.

Rochester on the Gennessee river and Erie canal, has risen in 10 or 12 years to the third rank of the cities of New York, exceeding Troy and Hudson, and only falling short of Albany.

Besides those enumerated, this prosperous state is literally decorated with beautiful and thriving towns and villages, amongst which may be named Poughkeepsie, Newburgh, Goshen, Athens, Cattskill, Schenectady, Herkimer, Waterford, Cooperstown, Syracuse, Utica with a population of 8000, Auburn, Manlius, Owego, Geneva, Canandaigua, Batavia, Buffalo and Lewiston.

Travelling over the state, it would be difficult to select amongst the villages, those most deserving of notice, and I have merely selected those I have seen: others are no doubt omitted, which as well deserve notice as those selected. This interesting state constitutes a picture, which *to be admired, needs but to be seen.*

Counties.	*Chief Towns.*	*Pop.* 1820.
Albany, *e.*	ALBANY	38,116
Allegany, *w.*	Angelica	9,330
Broome, *m. s.*	Binghamton	14,394
Cattaraugus, *w.*	Ellicottville	4,090

Counties.	*Chief Towns.*	*Pop. in* 1820.
Cayuga, *m. w.*	Auburn	38,897
Chatauque, *w.*	Mayville	12,568
Chenango, *m.*	Norwich	31,215
Clinton, *n.*	Plattsburg	12,070
Columbia, *e.*	Hudson	38,330
Cortlandt, *m.*	Cortlandt	16,507
Delaware, *m. s.*	Delhi	26,587
Dutchess, *e.*	Poughkeepsie	46,615
Erie, *w.*	Buffalo	
Essex, *n. e.*	Elizabethtown	12,811
Franklin, *n.*	Malone	4,139
Genesee, *w.*	Batavia	58,093
Greene, *e.*	Cattskill	22,996
Hamilton, *m. n.*	Wells	1,251
Herkimer, *m. n.*	Herkimer	31,017
Jefferson, *n. w.*	Watertown	32,952
Kings, *s.*	Flatbush	11,187
Lewis, *m. n.*	Martinsburgh	9,227
Livingston, *w.*	Geneseo	
Madison, *m.*	Morrisville	32,208
Monroe, *n. w.*	Rochester	
Montgomery, *m.*	Johnstown	37,569
New York, *s.*	New York	123 706
Niagara, *w.*	Lewistown	22,990
Oneida, *m.*	Rome and Whitestown	50,997
Onondaga, *m.*	Syracuse	41,467
Ontario, *m. w.*	Canandaigua	88,267
Orange, *s.*	Newburg and Goshen	41,213
Orleans, *n. w.*	Gaines	
Oswego, *n. w.*	Oswego	12,374
Otsego, *m.*	Cooperstown	44,856
Putnam, *e. s.*	Carmel	11,268
Queens, *s.*	North Hempstead	21,519
Renssalaer, *e.*	Troy	40,153
Richmond, *s.*	Richmond	6,135
Rockland, *s.*	Clarkstown	8,837
St. Lawrence, *n.*	Ogdensburg	16,037
Saratoga, *m. n.*	Ballston Spa	36,052
Schenectady, *m.*	Schenectady	13,081
Schoharie, *m.*	Schoharie	23,164

Counties.	*Chief Towns.*	*Pop.* 1820.
Seneca, *m. w.*	Ovid and Waterloo	26,619
Steuben, *s. w.*	Bath	21,189
Suffolk, *s. e.*	Riverhead	24,272
Sullivan, *m. s.*	Monticello	8,900
Tioga, *w. s.*	Owego and Elmira	16,971
Tomkins, *m. w.*	Ithaca	20,681
Ulster, *m. s.*	Kingston	30,934
Warren, *e. n.*	Caldwell	9,453
Washington, *e.*	Salem and Sandy Hill	38,831
Wayne, *n. w.*	Lyons	
Westchester, *s.*	Bedford	32,638
Yates, *m. w.*	Penn Yan	
Total		1,372,812

Of this aggregate were whites,	1,333,445
Free coloured persons,	29,279
Slaves,	10,088
Engaged in Agriculture,	247,648
Do. in Manufactures,	60,038
Do. in Commerce,	9,113

Progressive population.

1810	959,049	1825	1,616,458
1820	1,372,812	1828	1,766,000

History.—The mouth of the Hudson was discovered by the Dutch in 1609, and colonised by that nation in the following year. In 1621 the states general of the United Provinces, conferred upon the adjacent country the name of the New Netherlands, and granted it to the West India Company. It remained in the hands of the Dutch until 1664, when the whole of the New Netherlands was conquered by the English. Charles II. granted this province and adjacent parts to his brother James, Duke of York, under the name of New York. After much oppression under the Duke's Governors, a legislative assembly was formed in 1683, and the powers of the people augmented and secured by a bill of rights, soon after the revolution in 1688.

New York soon became a colony of considerable consequence, but her subsequent history up to the revolution in 1775, was barren of events of much consequence. Previous, however, to the overt act of resistance, the people of New York had been made ready for opposition to any length by individual oppression. With other colonies this resisted the stamp act of 1765, and in 1767 was by royal authority restrained from legislation until quarters were provided for the British troops. This impolitic and unjust imposition of burthening the people with soldiers in time of peace, was one of the most operative causes of the revolution, and in the case of New York, was aggravated by all the insolence of power. The consequence of such measures was to add the colony to the continental confederacy. The city of New York was early in the war seized by the British, and held by them until Nov. 25th, 1783.

Some of the most memorable events of the war occurred in New York, particularly the capture of Gen. Bourgoyne and army, Oct. 1777. A year rendered still more interesting in her annals by the adoption of a republican constitution, April 20th. This instrument has been twice amended; first, Oct. 27th 1801, and Nov. 10th 1821. In the last instance, the constitution was, in point of fact, remodelled.

Subsequent to the last changes in her form of government, the completion of the two great and many lesser canals, are the most prominent incidents in the history of this prosperous state.

NORTH CAROLINA.

Position, boundaries and extent.—Bounded by the Atlantic Ocean E. and S. E., by South Carolina S. and S. W., by Tennessee W., and Virginia N.

Miles.

Beginning on the Atlantic Ocean at the S. E. angle of Virginia, thence along that ocean to

the extreme eastern angle of South Carolina,	300
Thence in common with South Carolina,	308
Along N. E. part of Georgia,	25
In common with Tennessee,	165
In common with Virginia,	300
Having an entire outline of	1098

Extreme length from the western border of Haywood county to Cape Hatteras, in a direction but little inclined from east and west, 420 miles, and the area being a fraction above 50,000 square miles, the mean width may be assumed at 120 miles.

Extending from N. lat. 33° 50′ to 36° 30′, and in long. from 1° 30′ E. to 7° 12′ W.

Natural Geography.—Not even excepting Georgia, no state of the Union differs more in relative soil, than does North Carolina, and it also approaches Georgia in diversity of climate. Those zones of ocean alluvion, hills and mountains, which diversify New Jersey, Maryland and Virginia, become most conspicuous in North Carolina. The subjoined table shews the relative extent of the three natural sections, and their respective population by the census of 1820.

Sections.	Area.	Whites.	Fr. Col.	Slaves.	Total.
Alluvial,	22,743	163,559	10,009	113,830	287,398
Hilly,	14,000	165,980	4,582	79,720	250,282
M'ntainous.	13,257	85,025	515	15,677	101,217
Totals,	50,000	414,564	15,106	209,227	638,897

Without regarding the mountain ridges, we may safely allow 1000 feet difference of level between the sandy plains near the Atlantic coast, and the elevated vallies of the western and mountainous section of North Carolina. The extremes of the state differ 2° 40′ in lat. which combined with the allowance 2° 30′ for an elevation of 1000 feet, will yield extremes of temperature amounting to 5° 10′.

The great variety of climate is fully evinced by indigenous vegetables. The dwarf palms, and the live oak grow around the mouth of Cape Fear river, whilst in the western counties, the forests mark a climate of very abated mean temperature. The exotic vegetables have a variety consonant to the contrasted seasons. In the south eastern counties, and partially on the whole sea-sand zone, cotton is a staple production. As an advance is made westward this vegetable is followed and entirely superceded by grain, of almost every species cultivated in the United States except rice. The fig tree flourishes on Lower Cape Fear river; and in the western and central counties the apple is produced in abundance. The peach succeeds over the whole state, precarious as it is in every other section of the United States.

This state with a considerable line of sea coast, is in a singular manner devoid of good harbours, though the Roanoke and its confluents, the Neuse and its confluents, and Cape Fear river all debouch into the ocean upon its border. Cape Fear with 18 feet water is the deepest entrance into the state. The natural consequences of this defective access have been to turn the trade of central North Carolina into Virginia on one side, and to Charleston, South Carolina, on the other.

Though there is very much of fancy in the relative salubrity of the sea coasts and interior of the southern states, there must be a real difference, in nature, between the atmosphere over the sandy plains or marshes near the tides, and the elevated, waving and well watered vallies above the falls of the rivers. Perhaps this contrast is in no other state more decidedly marked. It contains the most extensive section and most salient part of the great sea sand zone, which sweeps round the United States from New York to Texas, and it also possesses a large tract of the finest vallies of the Appalachian system. Between such extremes the traveller may

find a considerable portion of all the annual vicissitudes in the meteorology of the United States.

In North Carolina is first found, receding from the north, those immense pine forests, which cover so much of all the southern states to Louisiana inclusive. Pine of various species is indeed found in almost every part of the Atlantic slope, but it is when passing Virginia that we discover this genera of trees usurping large spaces to the almost utter exclusion of other timber. Turpentine, tar, and pine lumber are therefore more or less staples of all the southern states. I have myself travelled a whole day, and made from 30 to 40 miles amid an unbroken forest of pines. Where these trees prevail they are the most exclusive of all trees, and every where indicative of sterility of soil.

Iron is found abundantly in North Carolina, and this state alone, amongst the states of the United States, has afforded gold in any considerable quantity. Very happily this seductive natural production does not greatly abound in the auriferous districts of North Carolina. The metal is found admixed with the soil in grains or lumps, from the most minute perceptible particles to masses of near two pounds avoirdupois.

Political Geography.—Raleigh, the seat of justice for Wake county, and seat of government of the state, is situated on the right bank of the Neuse river, 60 miles north by east from Fayetteville, at N. lat. 35° 44′, long. 1° 48′ W. The seat of legislation was fixed here in 1791. Population 2000. No town of any considerable magnitude has risen in this state; Fayetteville, Washington, and some others are active and wealthy depots, but as the tropics are approached the disposition of man to congregate in cities becomes weaker, and no other circumstance so strongly contrasts the extremes of the United States, as the size and frequency of the villages in the northern, and their scarcity in the southern states. This remarkable

difference cannot arise from relative density of population, as it is equally apparent whatever may be the respective population. If Natchez, on the Mississippi, with its combined commercial advantages, stood 10° of lat. more northwardly, it would long since have contained ten times its population. Charleston and New Orleans are mere exceptions to a general rule. But to return to the description of North Carolina.

Counties.	*Chief towns.*	*Pop.* 1820.
Anson, *s.*	Wadesboro	12534
Ashe, *n. w.*	Jeffersonton	4335
Beaufort, *e.*	Washington	9850
Bertie, *n. e.*	Windsor	10805
Bladen, *s.*	Elizabethtown	7276
Brunswick, *s.*	Smithville	5480
Buncombe, *w.*	Ashville	10542
Burke, *w.*	Morgantown	13411
Cabarras, *m. w.*	Concord	7248
Camden, *n. e.*	Camden C. H.	6347
Carteret, *e. s.*	Beaufort	5609
Caswell, *n.*	Caswell	13253
Chatham, *m.*	Pittsbōro	12661
Chowan, *n. e.*	Edenton	6464
Columbus, *s.*	Whitesville	3912
Craven, *s. e.*	Newbern	13394
Cumberland, *m. s.*	Fayetteville	14446
Currituck, *n. e.*	Currituck	8098
Davidson, *m. w.*	Lexington	
Duplin, *m. s.*	Duplin C. H.	9744
Edgecombe, *m.*	Tarboro	13276
Franklin, *m. n.*	Louisburgh	9741
Gates, *n. e.*	Gates C. H.	6837
Granville, *n.*	Oxford	18222
Greene, *m. e.*	Snow Hill	4533
Guilford, *m. w.*	Greensboro	14511
Halifax, *n.*	Halifax	17237
Haywood, *s. w.*	Franklin	4073
Hertford, *n. e.*	Winton	7712
Hyde, *e.*	Germantown	4967

Counties.	*Chief towns.*	*Pop.* 1820.
Iredell, *m. w.*	Statesville	13071
Johnson, *m.*	Smithfield	9607
Jones, *s. e.*	Trenton	5216
Lenoir, *m. e.*	Kingston	6800
Lincoln, *s. w.*	Lincolnton	18147
Martin, *m. e.*	Williamston	6320
Mecklenburgh, *s. w.*	Charlotte	16895
Montgomery, *m. w.*	Lawrenceville	8693
Moore, *m. s.*	Carthage	7128
Nash, *m. n.*	Nashville	8185
New Hanover	Wilmington	10866
Northampton, *n. e.*	Northampton C. H.	13242
Onslow, *s.*	Swansboro	7016
Orange, *m. n.*	Hillsboro	23492
Pasquotank, *n. e.*	Elizabeth City	8008
Perquimans, *n. e.*	Hertford	6857
Person, *n.*	Roxboro	9029
Pitt, *m. e.*	Greenville	10001
Randolph, *m. w.*	Ashboro	11331
Richmond, *s.*	Rockingham	7537
Robeson, *s.*	Lumberton	8204
Rockingham, *n.*	Wentworth	11474
Rowan, *m. w.*	Salisbury	26009
Rutherford, *s. w.*	Rutherfordton	15351
Sampson, *m. s.*	Clinton	8908
Stokes, *n. w.*	Salem	14033
Surry, *n. w.*	Rockford	12320
Tyrrel, *e.*	Columbia	4319
Wake, *m.*	RALEIGH	20102
Warren, *n.*	Warrenton	11158
Washington, *e.*	Plymouth	3986
Wayne, *m.*	Waynesboro	9040
Wilkes, *n. w.*	Wilkesboro	9967
Total,	-	638,897

The above elements show that whilst the middle or hilly section of North Carolina has a distributive population of 18 to the square mile, the sea-sand alluvial counties have but 12, and the mountainous a small fraction above 7. This feature in the dis-

tribution of population is common to Virginia, both Carolinas, and Georgia, as may be seen by referrence to those articles respectively. Another very important circumstance in the statistics of these states is, that the proportion of the castes is numerically on the two eastern sections inverse to density of general population. The coloured race is most numerous, comparatively, on the sea-sand alluvion, becomes less so on the hilly region, and least of all on the western mountainous tracts.

History.—The first, but abortive attempt by the English to colonize North America, was made in 1586, under a patent to Sir Francis Drake. A small colony was left on the Roanoke, in 1587, but was never again to be found; they sunk from the reach of all attempts to ascertain their fate. Some emigrants from Virginia penetrated the country about 1650, and made the first actual settlement of whites. What is now Carolina had been marked on the early Spanish maps as part of Florida. By the French it had received the name of Carolina, in honour of Charles IX. king of France, when the disastrous attempt was made by the French to colonize the North American coast, noticed under the head of Florida. The name Carolina prevailed. In 1661, a second English colony, from Massachusetts, reached and fixed themselves at Cape Fear river. After many vexatious struggles, the infant colony obtained a representative government in 1667, but two years afterwards marred by the fanciful constitution so famous under the name of Locke's scheme of government. This wild project was soon abandoned, and, like other English colonies, the advance of Carolina was slow, and its history rendered horribly memorable by a most destructive savage war in 1712. Previous to 1717 Carolina had been a proprietary government, but in that year became royal by purchase, and continued such until the revolution

in 1775. In 1720, the two Carolinas were separated into North Carolina and South Carolina.

North Carolina experienced a very great advantage in the revolutionary war from her inaccessible coast. Those destructive inroads, so ruinous in other states along the Atlantic, were here impracticable. Though, however, less exposed, the people of this state evinced their full sympathy with the residue of the American people. A convention was assembled at Halifax, where, on December 18th, 1776, the existing constitution was adopted. Since that auspicious event it may be doubted whether any other community ever passed fifty-two years with less of those sombre events which constitute the bulk of history; or whether a more unambitious community ever existed, with as much to excite and justify ambition.

OHIO.

Boundaries, position, and extent.—Bounded by Ohio river or Virginia S. E., Ohio river or Kentucky S., Indiana W., Michigan territory and Lake Erie N., and Pennsylvania N. E.

	Miles.
Beginning on Ohio river at the mouth of Great Miami and thence northward along E. boundary of Indiana from N. lat. 39° 07′ to 41° 35′	170
Thence due E. along the S. boundary of Michigan	80
Thence along the southern shores of Lake Erie to the N. W. angle of Pennsylvania	150
Due S. along the western boundary of Pennsylvania	93
Down Ohio river to the place of outset	440
Having an entire outline of	933

Extending from N. lat. 38° 30′ to 42°, and in long. from 3° 34′ to 7° 44′ W. Area 40,000 square miles. The breadth of Ohio, between the two meridian boundaries


OHIO
and
INDIANA
Miles.
5 10 20 30 40 50 60 70
Note. The figures along the roads
the distances from place to place.
LAKE MICHIGAN
MICHIGAN
LAKE ERIE
INDIANA
OHIO
ILLINOIS
KENTUCKY
VIRGINIA
Chicago
Ft Dearborn
St Joseph's R.
Kankakee R.
Eel R.
Indians
Missisinewa
Prophets Town
Wabash R.
Lafayette
Munsee T.
Winchester
Crawfordsville
New Castle
Centreville
INDIANAPOLIS
Rockville
Canton
Greencastle
Rushville
Dunlapsville
Aurora
Terre Haute
Marsinsburg
Shelbyville
Brookville
Spencer
Columbus
Greensburg
Bloomington
Versailles
Lawrenceburg
Burlington
Miriom
Palestine
Carlisle
Vernon
Hartford
Brownstown
Madison
Vevay
Vincennes
Washington
New Lexington
Hindoostan
Salem
Paoli
Petersburg
Fredericksburg
Portersville
Princeton
Columbia
Fredonia
Corydon
Louisville
Harmony
Boonsville
Troy
Rome
Evansville
Rockport
Henderson
East Fork
White R.
Wayne
Maumee R.
Ft Brown
Wiltshire
Ft Amanda
Ft St Mary
Ft Recovery
Greenville
Eaton
Dayton
Piqua
Troy
Salem
Springfield
Urbana
Belle Fontaine
Hardin
Lebanon
Hamilton
Colerain
Reading
CINCINNATI
Miami R.
Williamsburg
Georgetown
Augusta
Maysville
Portsmouth
Piketon
Scioto R.
CHILLICOTHE
COLUMBUS
Lancaster
Zanesville
Newark
Mt Vernon
Coshocton
Wooster
Mansfield
Canton
New Lisbon
Steubenville
Cadiz
St Clairsville
Wheeling
Marietta
Parkersburg
Gallipolis
Pt Pleasant
Athens
Jackson
Cleveland
Sandusky Bay
Cunningham I.
Painesville
Harpersfield
Maumee
Perrysburg
Defiance
Damascus
Lawrenceville
Lexington
FRANKFORT
Kentucky R.
Licking R.
Sandy R.
Port William
Flemingsburg
Catletsburg
Greenupsburg
Guyandot
Lit. Kenhawa R.
Ohio Riv.
Amherst

of Pennsylvania and Indiana, is within a very small fraction of 220 miles, consequently the mean breadth, in the direction of north and south, is about 182 miles.

Natural Geography.—The form of Ohio is more completely compact than any other state of the United States, and if the inflections of Ohio river be disregarded, contains the greatest area in proportion to perimeter. In our survey of Ohio and its confluent rivers, the state of Ohio was shewn to be composed of two unequalled inclined planes, the widest sloping towards the Ohio, and the narrowest, but most abrupt, declining into lake Erie. It has been also shewn that the interior table land of this state, was comparatively flat, and that the rivers oozing from this plateau, gained rapidity of current and depth of channel, advancing towards their recipients, and that the hills along and near Ohio river were the remains of a once elevated country now cut into deep chasms by the abrasion of water.

The state of Ohio in reality occupies about one third of that unequalled plane which declines from Pennsylvania to Mississippi river. Taken as a whole, this truly productive tract of 600 miles in length, and exceeding two hundred mean width, and now comprised in Ohio, Indiana, and Illinois, has no equal on earth, in any one continuous body. If this region is estimated above Ohio river or lake Erie, there is no one point, it is probable, 800 feet above the latter, or the surface of the former at Pittsburg. As the Ohio itself depresses, so does the interior table land, and the general difference of level may be estimated from about 460 down to 100 feet.

Except along the deep vales of Ohio and other streams near their efflux into that recipient, the climate is as uniform as the surface, and considerably more severe in the winter season, than corresponding latitudes on the Atlantic. It was indeed mistaking the phenomena of vegetation on Ohio river for

that of the whole of its valley, which produced those mistakes in meteorology which supposed the climate of this section of North America an anomaly. Many of these river vales are so situated as to concentrate the rays of the sun, and produce a reverberating heat; again they are depressed below the adjacent country, and of course, the amount of that depression compensates for difference of latitude: but with all these causes of misconception, it is yet matter of wonder that the freezing of the rivers did not afford correct means of comparison. The tables in this View may have some tendency to awaken attention to the subject, and to place the philosophy of meteorology in the Mississippi basin in its true light.

It has been noticed by Dr. Drake, that the winters of the northern part of Ohio were much more severe than similar seasons at Cincinnati. The causes are obvious from the data given in this View, Chap. X.; and are, difference of latitude, level, and exposure.

In a state of nature, Ohio was, with the exception of some central prairies, covered with a most dense forest of trees, to which the excessive fertility of the soil gave a most stupendous developement. Quitting the Appalachian system, the genera of pines, or terebinthine trees, become rare, as do evergreens of any species north of the region of palms, laurels, hollys, and laurier ālmond. In Louisiana, whereever the terebinthine trees cease, they are succeeded by the laurel, magnolia, holly, lesser laurel, and towards the sea coast, by the cypress, evergreen sassafras, and live oak; but in the Ohio valley, the region of pines is at once followed by deciduous trees. This very strong contrast in the components of their respective forests in winter, is another cause of overrating the temperature of the climate of Louisiana. Descending the rivers in the winter, the dark green of the forests augments, and consequently, that air of desolation softens, which renders a country of

entirely deciduous trees so dreary, when their naked branches only meet the eye.

The size, majesty, and generic and specific variety of the trees of the Ohio basin has been a just theme of admiration, but I am inclined to consider the picture over-coloured. I spent my early years in the Ohio valley and Mississippi basin alternately, and could never observe any single species of tree common to both, say Ohio and Louisiana as extremes, which did not reach a height and mass greater in the lower climate of Louisiana. This is the case with every species of oak and hickory, with sassafras, the liriodendron, the elms, and numerous other trees. If there is an exception, it is the sycamore, and even of that I am very doubtful.

In cultivated vegetables, Ohio is in a peculiar manner productive. Indian corn, wheat, rye, oats, barley, tobacco, and orchard fruits, are staples. Meadows and gardens, where due attention is paid to their improvement, have a correspondent abundant production.

Of metallic matter, iron is the only ore found in great quantity. Coal, of the bituminous species, exists in extensive strata along the Ohio and some of its confluent streams, and no doubt underlays parts of the state too level to expose its existence except by artificial means.

The peculiar commercial advantages of this state have been already sufficiently noticed under the different heads of rivers and canals.

Political Geography.—Ohio shares a common feature with the greater number of states of the United States, that its real is not its legal capital. The city of Cincinnati, is the second emporium in population, commerce, wealth, and literary institutions, which has risen in the basin of Mississippi. This rapidly increasing city stands on an undulating acclivity on the right bank of Ohio river, at N. lat. 39° 06′, and long. 7° 25′ W. It is by the channel of

Ohio, 445 miles below Pittsburg; 860 from New Orleans by land, and 850 from New York by the route of lake Erie, Erie canal, and Hudson river. It was first laid out by Judge Symmes, in 1789, but did not increase much until after the treaty of Greenville, 1795. The progressive population is a real phenomenon in colonization. In 1810, the population was 2,540; in 1813, 4,000; in 1820, they had risen to 10,000; to 12,016 in 1824, and in 1826, to 16,230. The existing population falls but little, if any, below 20,000. "There are," (1828) says Mr. Flint, a resident author, "28 clergymen, 34 attorneys, 35 physicians, 800 persons engaged in mercantile pursuits, 500 in navigation, and 3000 in manufactures."

The mercantile, literary, religious, and manufacturing establishments are numerous and highly respectable. The markets are abundantly supplied, and here in the great central basin is seen all the richly varied features of a prosperous, active, intelligent, and highly civilized emporium.

Columbus, the seat of legislation, stands on the left bank of Sciota river, at N. lat. 39° 57′, and long. 6° 02′ W., and very near the centre of the state, 101 miles N. E. from Cincinnati. In the spring of 1812, the site was under a dense forest; it now contains the necessary buildings for the seat of justice of Franklin county, and for the seat of state legislation. Steubenville on the right bank of Ohio river, at N. lat. 40° 25′ and long. 3° 40′ W., is in reality the second town of the state. I was myself on the spot in 1799, when the first rude buildings were rising amid a thick growth of primeval trees; and the population now exceeds 3000. The importance of the place cannot, however, be estimated from comparative population, as the manufacturing establishments are highly important.

In respect to its villages Ohio verifies, in a most striking manner, the remark I have made under

the head of North Carolina; that is, the tendency of the northern population to form towns, and *vice versa* in the southern and slave-holding states. Besides those already named in this article, to sustain the hypothesis, we may add, Zanesville and Putnam, united by two bridges over Muskingum river, Chilicothe on Sciota, Marietta at the mouth of Muskingum, Dayton, Cadiz, Cleaveland, Athens, St. Clairsville and many more.

In relative importance the canal system of Ohio is a most important feature in the internal improvement of the United States; and if we regard the recent settlement of the state, an unequalled moral and political phenomenon. Those canals have been noticed, and it may be merely added here, that the project of forming a great canal line across the state was first acted on as a legislative measure in 1819, and first effectually commenced in 1825.

The Ohio canal, including feeders, is about 320 miles in length, with 1185 feet lockage. It debouches into Lake Erie at Cleaveland, and into the Ohio at Portsmouth, near the mouth of Great Sciota. The Miami canal between Dayton and Cincinnati is nearly completed, and the Ohio canal it is calculated will be completed in 1830.

Counties.	*Chief towns.*	*Pop. in* 1820.
Adams, *s.*	West Union	10406
Allen, *w.*	Amanda	
Ashtabula, *n. e.*	Jefferson	7382
Athens, *s.*	Athens	6338
Belmont, *e. s.*	St. Clairsville	20329
Brown, *s. w.*	Georgetown	13356
Butler, *s. w.*	Hamilton	21746
Champaign, *m. w.*	Urbana	8479
Clark, *m. w.*	Springfield	9533
Clermont, *s. w.*	Batavia	15820
Clinton, *s. w.*	Wilmington	8085
Columbiana	New Lisbon	20033
Coshocton, *m. e.*	Coshocton	7086

Counties.	*Chief towns.*	*Pop.* 1820.
Crawford, *m. n.*	Bucyres	
Cayahoga, *n.*	Cleaveland	6328
Darke, *w.*	Greenville	3717
Delaware, *m.*	Delaware	7639
Fairfield, *m. s.*	Lancaster	16633
Fayette, *m. s.*	Washington	6613
Franklin, *m.*	COLUMBUS	10292
Gallia, *s.*	Gallipolis	7098
Geauga, *n. e.*	Chardon	7791
Greene, *m. w.*	Xenia	10529
Guernsey, *e.*	Cambridge	9292
Hamilton, *s. w.*	CINCINNATI	31764
Hancock, *n. w.*	Finley	
Hardin, *m. w.*	M'Arthur	
Harrison, *e.*	Cadiz	14345
Henry, *n. w.*	Damascus	
Highland, *s.*	Hillsboro	12308
Hocking, *m. s.*	Logan	2130
Holmes, *m. e.*	Miliersburg	
Huron, *n.*	Norwalk	6675
Jackson, *s.*	Jackson	3746
Jefferson, *e.*	Steubenville	18531
Knox, *m.*	Mount Vernon	8326
Lawrence, *s.*	Burlington	3499
Licking, *m.*	Newark	11861
Logan, *m. w.*	Bellefontaine	3181
Lorain, *n.*	Elyria	
Madison, *m.*	New London	4799
Marion, *m.*	Marion	
Medina, *n.*	Medina	3082
Meigs, *s.*	Chester	4480
Mercer, *w.*	St. Mary's	
Miami, *w.*	Troy	8851
Monroe, *s. e.*	Woodsfield	4645
Montgomery, *s. w.*	Dayton	16000
Morgan, *s. e.*	M'Connellsville	5297
Muskingum, *m. e.*	Zanesville	17824
Paulding, *n. w.*		
Perry, *m. s.*	Somerset	8429

Counties.	*Chief Towns.*	*Pop.* 1820.
Pickaway, *m. s.*	Circleville	13149
Pike, *s.*	Piketon	4253
Portage, *n. e.*	Ravenna	10095
Preble, *w. s.*	Eaton	10237
Putnam, *w.*		
Richland, *m. n.*	Mansfield	9169
Ross, *s.*	Chillicothe	20619
Sandusky, *n.*	Croghansville	852
Scioto, *s.*	Portsmouth	5750
Seneca, *n.*	Tiffin	
Shelby, *w.*	Sidney	2106
Starke, *e.*	Canton	12406
Trumbull, *e. n.*	Warren	15546
Tuscarawas, *e.*	New Philadelphia	8328
Union, *m. w.*	Marysville	1996
Van Wert, *w. n.*	Willshire	
Warren, *s. w.*	Lebanon	17837
Washington, *s. e.*	Marietta	10485
Wayne	Wooster	11933
Williams	Defiance	
Wood	Maumee	733
Total		581,434

Of these, engaged in	Agriculture	110,921
Do	Manufactures	18,956
Do	Commerce	1459

Progressive Population.

1790	3,000	1810	230,760
1800	45,365	1820	581,434

"In 1830," says Mr. Flint, "there is no doubt, but it will exceed a million."

History.—This giant, yet in its cradle, first sprang to life in 1788, at Marietta, and was put under the fostering care of General Rufus Putnam and the Rev. Dr. Manasseh Cutler. Essex and Middlesex counties, in Massachusetts, were the parents of this infant colony. In 1787, the territory north-

west of the river Ohio had been formed, of which the now state of Ohio was a part. The early settlements, like those of Kentucky, were made in tears and blood, and advanced slowly, until the treaty of Greenville in 1795, and the surrender of Michigan territory in 1796, gave peace and security to the west. Ohio was detached from the Northwestern territory in 1800, and formed, with Michigan, a separate jurisdiction. Having acquired the requisite numbers, the Congress of the United States, in April, 1802, authorised the formation of a constitution. The convention under this act met November, 1802, and on the 29th of that month adopted the existing constitution. In January, 1803, the state was formally admitted into the Union, and, except unexampled augmentation of physical force, and the erection of her stupendous canals, has afforded no subsequent historical events unconnected with the general history of the United States.

The official military reports made the militia of Ohio, in 1826, amount to 110,176 effective men.

PENNSYLVANIA.

Position, boundaries, and extent.—Northern part of New Jersey E., Southern New Jersey and Delaware S. E., Maryland S., Virginia S. W., the state of Ohio and lake Erie N. W., and New York N. and N. E.

	Miles.
Beginning on the Delaware river, at the extreme N. E. angle of the state of Delaware, and thence with the semicircle of 12 miles round New Castle to the eastern border of Cecil county, Maryland	24
Thence northward to the N. E. angle of Maryland	5
Along the northern boundary of Maryland and the curve of N. lat. 39° 43′ to the N. W. angle of Maryland	200
In common with Virginia, from the N. W. angle of Maryland to the S. W. angle of Pennsylvania itself	60

	Miles.
Due N. along Ohio and Brooke counties, Virginia, to Ohio river	64
Continuing the last limit due N. along the state of Ohio to lake Erie	91
Along the S. E. shore of lake Erie to the western limit of New York	39
Due S. along Chatauque county, New York, to N. lat. 42° and the N. W. angle of the latter state	19
Due E. in common with New York, to the right bank of Delaware river	230
Thence down Delaware river to the place of outset	230
Having an entire outline of	959

Extending from N. lat. 39° 43′ to 42° 16′, and in long. from 2° 20′ E. to 3° 36′ W.

Next to Ohio and Connecticut, Pennsylvania is the third most compact state in the confederacy. I have taken some pains to determine the exact area of this state, from finding glaring errors in the tables on the state map, and have found that, measured by the rhumbs, or calculated as a section of the sphere, the superficies is so near 47,000 square miles as to admit the adoption of that round number. The breadth is very nearly that of its extremes of latitude, rejecting the small triangle north of 42°, or 158 miles nearly. The mean length is within a small fraction of 300 miles.

Natural Geography.—It may be doubted whether a more widely diversified and equally continuous region exists on the face of the earth than Pennsylvania, or one of similar area, on which the vegetable and mineral productions are generically or specifically more numerous. In a state of nature the streams of this state flowed through a most dense forest. In the same sense as applied to the sea-sand alluvial zone noticed under the heads of the two Carolinas, Georgia, Florida, Alabama, and Louisiana, no part of Pennsylvania is level, and in respect to surface is

divisible into three natural sections. First, a small but important hilly tract between the sea-sand alluvion and the lower ridges of the Appalachian system; second, the mountainous, or middle section; and third, the western hilly. The subjoined tabular view presents the respective area of these sections and their distributive population according to the census of 1820.

Sections.	Square miles.	Aggregate Population.	Population to the sq. mile.
Eastern,	7,869	569,355	77
Middle or M'ntainous	25,189	260,506	10
Western,	13,942	219,597	16½
	47,000	1,048,458	22⅓

		Square Miles.	Acres.
Of preceding area	Delaware drains	6,710	4,294,400
do.	Susquehanna	21,390	13,685,600
do.	Genesee	150	96,000
do.	Potomac	1,590	1,017,600
do.	Ohio	16,760	10,598,400
do.	Lake Erie	380	243,200
		46,980	29,935,200

The relative level of the cultivatable soil of Pennsylvania, if the mountain plateaus are included, differs about 1200 feet or an equivalent to three degrees of latitude, therefore the extremes of latitude being 2° 17′ or equal to 2°.3 of Faht. the real extremes of temperature over the state amount to near 5⅓° of that instrument. The ample tables in Chap. X. will enable the reader to make his own comparisons.

Pennsylvania is emphatically a country congenial to wheat, meadow grass and the apple, but admits a wide diversity of other vegetable productions. Grain, except rice, embraces the whole list of cerealia cultivated in the United States; and amongst

fruits, besides the apple, peaches, pears and plums abound.

Of indigenous forest trees this state yields as great specific variety, as it is probable is to be found on the globe in a zone two degrees and one third wide, and not quite 6 degrees of longitude in length. The terebinthine forests are in great part confined to the mountains, and the deciduous trees to the eastern and western seetions. On the latter, the sugar maple, rare even in the mountain vallies except towards New York, becomes plentiful. These distinctions are however general, as the great mountain vallies differ in no essential respect from other hilly parts of the state. The productive soil is also, in a very remarkable manner, equally distributed. Some of the most fertile alluvial river bottoms in the state are included in the mountain section.

It ought to be particularly noticed that the apparent difference of relative population has arisen more from political than natural causes. Much of the northern part of the state has been and continues untenanted, from being held by owners who seem to either consider their property of no value, or of such high value as to reserve it for future ages. The great body of the population has spread over the eastern, southern, and western borders, and left the central and northern a comparative wilderness.

On strict geographical principles, the whole of Pennsylvania is within the Appalachian system. If due regard is paid to the courses of the rivers, this truth becomes undeniable. The same hypothesis is again sustained by the distribution of fossil bodies. Of these, the first advancing from the primitive ledge is marble of beautiful variety and excellent texture. This fine production has contributed to adorn the eastern towns, and even farm houses of the state. Iron and anthracite coal follow marble, and exist in masses which defy all human power to exhaust. Iron continues to abound over the whole

state, and where the anthracite coal ceases, the bituminous commences, and seems to underlay great part of the western, and some of the central parts of the state. As if to complete the list of most useful fossil bodies, water holding muriate of soda (common salt) in solution, abounds where it is most valuable. In the region of bituminous coal, wherever the earth has been penetrated to any great depth, salt water has been found. Salt works, on a large scale, exist on the Conemaugh and some other parts of the western section.

Pennsylvania seems a region from which navigable streams flow as radii from a common centre. Under the head of canals we have seen a brief view of how far human exertion has been made to render the advantages of nature effectual.

Political Geography.—The seat of legislation has been placed at Harrisburg, on the left bank of the Susquehanna, 100 miles W. from Philadelphia, at N. lat. 40° 16′, and in long. 0° 07′ E. This borough was laid out on an alluvial bank of the Susquehannah, the streets extending with or at right angles to the river. The population in 1820 was nearly 3000, and is at present considerably increased. The state house stands on a comparative hill, and the town being placed at the intersection of a river and mountain valley, a most magnificent sweep of vision opens from the dome. The whole vicinity is strongly marked by richness and variety of landscape, and by a fertile and well cultivated soil. A substantial bridge connects Harrisburg with the opposite bank of the Susquehanna.

The actual capital of Pennsylvania is Philadelphia. This already great city stands on an alluvial deposit at the margin of the primitive ledge, and on the peninsula between the Delaware and Schuylkill rivers, at N. lat. 39° 57′, in long. 1° 56′ E. and 74° 59′ W. from the Royal Observatory at Greenwich, 88 miles S. W. from New York, 110 N. E. from

Baltimore, and about 100 miles by water within the Capes of Delaware.

The original Indian name of the place was Coaquannoc, but being chosen by William Penn as the seat of government for his colony, he gave it the name of Philadelphia. It was laid out in 1683, and the second Assembly of Pennsylvania met there April 1683. The advance of this city was steady and in a singular manner uniform. At the period of all subsequent enumerations after its foundation, the numbers within it and the immediate precincts amounted to about the one-tenth of the whole number in the colony or state. In 1753 the inhabitants amounted to 18,000, in 1790 they had increased to 43,527, in 1810 to 92,247, and in 1820 to 108,809. It is not within the scope of this View to enumerate the public edifices of any city, nor even its literary institutions; it may be sufficient to observe that Philadelphia is at this time, 1828, most rapidly increasing; from what I have seen within a few days not less than one thousand houses, and many of them superb mansions, are rising, and what is better for real improvement of the city, these buildings are mostly on the hitherto vacant lots within the formerly built parts. I was in Philadelphia when the census of 1820 was taken and am convinced it was greatly under-rated. There is at present with every due allowance not less than 150,000 people in the city and its liberties.

Lancaster and Pittsburg are both chartered cities. The former contained by the census of 1820, 6633 inhabitants. It is compactly built, and is a place of great wealth and business, but rather stationary in respect to increase of population.

Pittsburg, the Birmingham of Pennsylvania, and indeed of the Ohio valley, stands on the peninsula between the Monongahela and Alleghany rivers, 282 miles westward from Philadelphia, at N. lat. 40° 27′, long. 3° 02′ W. Similar to Philadelphia,

the census tables present a false view of the population of Pittsburg by excluding the suburbs. In a commercial point of view, Pittsburg is composed of the city proper, Northern Liberties, village of Alleghany, Birmingham, and some still smaller places in the vicinity. In 1820 the census gave an aggregate population of 7248; it was really at that time no doubt above 10,000, and now rising 15,000. A fine bridge has been erected over each river, and the interior of the city has the aspect of one great workshop. The adjacent hills contain incalculable quantities of bituminous coal of excellent quality, which is rendered easy of access by lying in strata upwards of 300 feet *above* the streets of the city. In addition to a good turnpike road it will soon be connected with the Susquehanna valley by a system of canals.

Reading on the Schuylkill, Easton on the Delaware, at the mouth of the Lehigh, Sunbury and Northumberland united by a bridge at the junction of the two great branches of Susquehanna, Wilkesbarre on the eastern and Williamsport on the western branch of Susquehanna, York, Gettysburg, Carlisle, Chambersburg, Huntingdon, Bedford, Waterford and Erie, are all fine borough towns, and some of perhaps not much lesser note may be enumerated, such as Lebanon, Allentown, Lewistown, Bethlehem, &c.

The canals of this state have been noticed under the head of the United States. In reality the Chesapeake and Delaware canal is in great part a work of Pennsylvania, and may with propriety be enumerated amongst the improvements executed under the patronage and with the capital of this powerful state.

Counties.	*Chief towns.*	*Pop.* 1820.
Adams, *s.*	Gettysburg	19370
Allegheny, *w.*	PITTSBURG	34921

Counties.	*Chief Towns.*	*Pop.* 1820.
Armstrong, *w.*	Kittanning	10324
Beaver, *w.*	Beaver	15340
Bedford, *s.*	Bedford	20348
Berks, *n.e.*	Reading	46275
Bradford *n.*	Meanville	11564
Bucks, *e.*	Doylestown	37842
Butler, *w.*	Butler	10193
Cambria, *m. w.*	Ebensburg	3287
Centre, *m.*	Bellefonte	13796
Chester, *s. e.*	West-Chester	44451
Clearfield, *m. w.*	Clearfield	2342
Columbia, *m.*	Danville	17621
Crawford, *n. w.*	Meadville	9397
Cumberland, *m. s.*	Carlisle	23606
Dauphin, *m.*	HARRISBURG	21653
Delaware, *s. e.*	Chester	13701
Erie, *n. w.*	Erie	8553
Fayette, *s. w.*	Uniontown	27285
Franklin, *s.*	Chambersburg	31892
Greene, *s. w.*	Waynesburg	15554
Huntingdon, *m.*	Huntingdon	20142
Indiana, *m. w.*	Armagh	8882
Jefferson, *m. w.*	Port Barnet	561
Lancaster, *s. e.*	LANCASTER	68336
Lebanon, *m. e.*	Lebanon	16988
Lehigh, *e.*	Allentown	18895
Luzerne, *n. e.*	Wilkesbarre	20027
Lycoming, *m. n.*	Williamsport	13517
M'Kean, *n.*	Smethport	728
Mercer, *w.*	Mercer	11681
Mifflin, *m.*	Lewistown	16618
Montgomery, *s. e.*	Norristown	35793
Northampton, *e.*	Easton	31765
Northumberland, *m.*	Sunbury	15424
Perry, *m.*	Bloomfield	11342
Philadelphia, *s. e.*	PHILADELPHIA	137097
Pike, *n. e.*	New-Milford	2894
Potter, *n.*	Coudersport	186
Schuylkill, *m. e.*	Orwigsburg	11339

Counties.	*Chief towns.*	*Pop. in* 1820.
Somerset, *s. w.*	Somerset	13974
Susquehanna, *n. e.*	Montrose	9960
Tioga, *n.*	Wellsboro	4021
Union, *m.*	New-Berlin	18619
Venango, *n. w.*	Franklin	4915
Warren, *n. w.*	Warren	1976
Washington, *s. w.*	Washington	40038
Wayne, *n. e.*	Bethany	4127
Westmoreland, *m. w.*	Greensburg	30540
York, *s.*	York	38759
Total		1,049,458

Of the preceding aggregate, engaged in

	Agriculture	140801
do.	Manufactures	60215
do.	Commerce	7083

History.—The exact time when, or by what civilized nation, the first settlements in Pennsylvania were made, is doubtful. The Dutch had discovered and named the Delaware, as early as 1612. They called the Hudson North river, and the Delaware South river, relatively to their geographical position. A Swedish colony, under the auspices of Gustavus Adolphus, reached Delaware in 1628, and the Roman Catholic colony who planted Maryland, reached the Chesapeake in 1633. Pennsylvania was thus early claimed by three nations. The Dutch supplanted the Swedes, and were themselves subdued by the English in 1664. In the interim scattering settlements were made along the Delaware by, it is probable, individuals of all parties. Subsequent to 1664, the whole Delaware country was claimed by the duke of York under the grant already mentioned in the articles Delaware, New Jersey and New York, and so remained until November 1680, when the famous charter of Pennsylvania was granted to William Penn, and in May 1681 taken possession of in his name by his relation, Markham. Penn him-

self arrived in the Delaware, and landed at New Castle, Oct. 24th, 1682, and found already in the country about 3000 people, Dutch, Swedes, Finns and English. The first assembly met, and we may say the first real foundation of Pennsylvania, as an English colony, was laid at Chester, December 4th, 1682. The most prominent incidents in the future history of this peculiar colony may be seen in the historical introduction to this View. I can only subjoin here, that Pennsylvania acted a most conspicuous part in the revolution. It was in her capital that that Declaration was made, which really changed the history of the world, and provided a vantage ground on which the claims of human rights could be sustained.

In 1776, a constitution was formed, which was superceded by a second, adopted September 2d, 1790. Since the latter period the morning dawn of Pennsylvania, with the exception of one or two dark and heavy clouds, has been clear, serene and brilliant. Her history has been for thirty-four years made up from the records of improvement in every thing which can secure the permanent happiness of her citizens.

RHODE-ISLAND.

Position, boundaries, and extent.—Bounded by the Atlantic ocean S. and S. E.; Connecticut W., and Massachusetts N., N. E. and E.

	Miles.
Having an outline along the Atlantic ocean	40
Along Connecticut	50
Along Massachusetts	70
With an entire outline of	160

Extending from N. lat. 41° 18′ to 42° 01′, and in long. from 5° 12′ to 5° 55′ E.

Exclusive of water, the area is about 1200 square miles or 768,000 acres. Length 50, and mean width 24 miles.

Natural Geography.—Compared with its limited extent, Rhode Island is a very diversified state. The north-west part is hilly and broken; but gradually becoming level advancing towards the Atlantic ocean. The state is composed of three natural sections; four-fifths of the whole is a generally hilly parallelogram W. from Narragansett bay; the second section is composed of the truly delightful islands of the Narragansett bay, Rhode Island, Prudence, and Conanicut, with a few still smaller; the third section is composed of a small irregular slip along Massachusetts, and E. from Narragansett.

The latter bay is at once the ornament and nursing mother of Rhode Island. To describe this elegant sheet of water is to delineate much of the most beautiful and useful in nature. At its mouth spreads the noble harbour of Newport, and narrowing and shallowing inland for about 25 miles amidst the most attractive scenery, it terminates in the convenient though shallow harbour of Providence.

The soil of Rhode Island is as various as the features of its geography; thin and rocky to the N. W.; level, and in part marshy to the S. E.; but in the islands and on many of the capes jutting into Narragansett bay, exuberantly fertile.

Political Geography.—Providence, the legal and commercial capital of Rhode Island, stands on both sides of Providence river at the head of Narragansett bay, 28 miles nearly due N. from Newport, 41 miles S. S. W. from Boston, and about 170 miles N. E. by E. from New York. N. lat. 41° 50′, long. 5° 36′ E. Pop. 1810, 10,071, and in 1820, 11,767. In proportion to population, Providence is, it is probable, the most extensive manufacturing and commercial city of the United States.

Newport stands on the S. W. part of Rhode Island, on a most beautiful circular bay of about one mile diameter, completely land locked, by the projecting points of Rhode Island and Connanicut

island. There is not perhaps a more perfectly formed haven on earth, or one at once more accessible and defensible than Newport. The rise of Providence at the head of the bay and Bristol and other commercial towns along its shores, has operated to check the growth of Newport; but as a maritime station, and even a commercial depot,nature has secured advantages to this charming spot which political revolutions cannot remove, or render nugatory. As a city Newport is still respectable for its extent and population. In 1810, the number of inhabitants was 7907, but in 1820, only 7319.

Counties.	*Chief towns.*	*Pop.* 1820.
Bristol, *e.*	Bristol	5637
Kent, *m.*	East Greenwich	10228
Newport, *s. e.*	Newport	15771
Providence, *n.*	Providence	35736
Washington, *s.*	Kingston	15687
Total		83,059

Of this aggregate, were engaged in	Agriculture	12559
do. —	Manufactures	6091
do.	Commerce	1162

Though very limited in extent, the distributive population of Rhode Island is 69 to the square mile, and increased from 1810 to 1820, 6128.

History.—The great founder of Rhode Island, was Roger Williams, who fled from religious controversy in Massachusetts, and fixed himself and followers at the head of Narragansett bay, 1636, calling the place of ther retreat Providence. A female Antinomian leader, Mrs. Hutchinson, soon followed Mr. Williams and settled on "*Red Island*," now Rhode Island. The two little colonies were united by charter procured by Williams from Charles I, in 1643-4. A second charter was obtained from Charles II, in 1663, which continues to be

the constitution of Rhode Island. Brown University was founded in 1664, and was the last important historic event particular to this little colony for upwards of a century. This tranquil period, was terminated in 1765, by the stamp act, against which, and every other violence of the British government, the people of Rhode Island opposed a steady and effectual resistance. As early as 1774 the royal stores and artillery in the colony were seized; and when the day of open war dawned, one of the most effective generals of the Anglo-American nation sprung like a youthful lion from among the farmers of Rhode Island. Though morally united from the outset of the contest, it was, however, the last of the "*Thirteen,*" who acceded to the present form of general government under the constitution of 1787. Her acquiescence was not obtained until May 1790.

SOUTH-CAROLINA.

Position, boundaries, and extent.—Bounded by the Atlantic ocean S. E.; Savannah river or Georgia S. W.; and by North Carolina N. and N. E.

	Miles.
Beginning on the Atlantic ocean at the extreme southern angle of North Carolina, thence along the Atlantic ocean to the mouth of Savannah river	185
Up Savannah river opposite Georgia, to N. lat. 35°	270
Thence along North Carolina to the place of outset	300
Having an entire outline of	755

Extending from N. lat. 32° to 35° 10′, and in long. from 1° 44′ to 6° 20′ W.

In my Geographical Dictionary I gave 28,245 square miles as the area of South Carolina; but measuring that state, by the rhumbs on the recent state

map, I find the area exceeding 33,000. The greatest length of this state is from its eastern angle on the Atlantic ocean to its extreme western, at the junction of the Savannah and Chatuga rivers, 275 miles; mean width very nearly 120 miles.

Natural Geography.—Similar to Georgia and North Carolina, South Carolina is naturally divided into three zones, the respective area, and distributive population of which, in 1820, are expressed in the following table.

Natural section.	Area in sq. miles	Whites.	Fr. col. people.	Slaves.	Aggregate.	Pop. to sq. mile.
Alluvial	9000	43241	4451	132637	180329	20
Hilly	13000	101537	1801	89013	192351	14½
M'ntainous	11270	93114	553	34807	128474	11½
Amount	33270	237892	6805	256457	501154	15

This table exhibits the comparative general density and the numbers of each caste, and is the only instance in the United States, where the African race preponderates.

The sections are perhaps more distinctly marked in South Carolina than in any other contiguous state. The sea-sand zone rises by a very gentle acclivity from the ocean; the rivers are shallow near their mouths, and much of the surface flooded by the tides and land floods. This outer belt is followed, about the lower falls of the river, by a still more sandy zone, which is in turn succeeded by the real hilly tract between the head of tides and the mountains. The third or mountainous tract, with the exception of the mountain ridges and a still increased elevation, differs in no other essential respect from the middle or hilly zone. Both those latter sections of South Carolina, partake of the general elegant diversity of surface, salubrity of climate, and fertility

of soil, which distinguishes the verge of the Appalachian system in all its length.

The extreme north-western part of South Carolina is on the great table land from which the sources of the Tennessee flow N. and N. W.; those of Chattahooche from S.W.; and those of the Savannah and Santee S. E. It is probable that an allowance of two degrees of Fahrenheit will be a moderate estimate for the effect on temperature by relative level, from the south-east to the north-west angle of this state, and the difference of lat. being 3° 10′, the entire difference of temperature will exceed 5° of Fahrenheit.

The natural vegetation of this tract, combines the palms and pines, with the oaks and hickory, and in cultivated plants, the sugar cane and orange to the wheat and apple. Cotton, rice, and grain, particularly the two former, are its staples. Rice is confined to the sea coast, and sugar in great part to Beaufort district. The orange has also a very limited extent.

Taken as a whole, it is a very productive state, and though the sea coast is not well supplied with harbours of the first order, it abounds with those of a secondary class. Besides the Savannah which debouches at its southern extreme, and some smaller streams which flow from the interior, two fine rivers in part rise within, and in part traverse South Carolina, and convey to its marts the produce of the central sections of North Carolina. Similar to other southern states, the interior river navigation of South Carolina is much better than on the sea coast.

Political Geography.—Charleston adds another to the already long list of cities, which greatly exceed in importance the legal capitals of the states to which they belong. This already great emporium, stands on the peninsula between Ashley and Cooper rivers, 6 miles within the bar, at lat. 32° 50′ N. and long. 2° 54′ W., 550 miles S. S. W. from Washington City. The advance of Charleston has

been rather slow; in 1790 the inhabitants were 16,-359, in 1800 they were 18,711, in 1810 they were 24,711, and in 1820 had risen to only 24,780. The canal from the head of Cooper into Santee river has been noticed.

Columbia the capital of South Carolina and seat of justice for Richland district, stands on the left bank of Congaree, immediately below the junction of Saluda and Broad rivers. Geographically, the situation of this place is very remarkable; N. lat. 34° and 81° W. long. from London, intersect within its limits, it is of course 4° 05′ W. from W. C.

The subdivision of South Carolina in place of counties, is into districts as follow:

Districts.	*Chief towns.*	*Pop.* 1820.
Anderson	Anderson	
Abbeville, *n. w.*	Abbeville	23189
Barnwell, *s. w.*	Barnwell C. H.	14750
Beaufort, *extreme s.*	Beaufort	32199
Charleston, *s.*	Charleston	80212
Chester, *n.*	Chester C. H.	14379
Chesterfield, *n.*	Cheraw	6645
Colleton, *s.*	Walterboro	26373
Darlington, *n. e.*	Darlington	10949
Edgefield, *w.*	Edgefield C. H.	24309
Fairfield, *m. n.*	Winsboro	17174
Georgetown, *e.*	Georgetown	17603
Greenville, *n. w.*	Lancasterville	14530
Horry, *e.*	Conwayboro	5025
Kershaw, *n.*	Camden	12442
Lancaster, *n.*	Lancasterville	8746
Lawrens, *w.*	Laurens	17682
Lexington, *m.*	Granby	8083
Marion	Marion	10201
Marlborough, *n. e.*	Bennetsville	6425
Newberry, *m. w.*	Newberry	16104
Orangeburg, *m.*	Orangeburg	15655
Pendleton, *n. w.*	Pendleton	27022
Pickens	Pickens	

Richland	COLUMBIA	12321
Spartanburg, *n. w.*	Spartanburg C. H.	16989
Sumpter, *m.*	Sumpterville	25369
Union, *n. w.*	Unionville	14126
Williamsburgh, *e.*	Kingstree	8716
York, *n.*	York C. H.	14936
Total		501,154

History.—The first settlement of South Carolina by the whites, appears to have been made at Port Royal about 1670, but no permanent establishment was formed until 1680, when the few settlers then in the country fixed on Oyster Point between Ashley and Cooper rivers and laid the foundation of the city of Charleston. Previous, however, to the founding of Charleston, a grant had been made in 1662 by Charles II. to Lord Clarendon and seven others, of all that zone of North America, from N. lat. 31° to 36°, and two years afterwards the boundaries were extended to N. lat. 36° 30′. The proprietary government of Carolina, was if possible more complex than any other similar government in the English colonies. This confusion was augmented by Locke's scheme and religious contention, which terminated in 1719, by a separation of the two Carolinas, and the establishment of a royal government.

One of the events in the history of South Carolina however, of most importance, was the introduction by Gov. Smith in 1695, of the cultivation of rice; cotton followed, and the colony flourished until checked by Indian war, and subsequently by that of the revolution. In the latter contest, South Carolina suffered severely, and was the theatre of some of the most remarkable events which it produced. The names of Marion, Sumter and Lee, threw a halo of glory over the state. The actions and character of Marion give to the history of the southern campaigns, the rich hue of the epic, with the solid grandeur of real facts. The existing government

or constitution of South Carolina, was adopted June 3rd 1790, amended December 17th 1808, and again December 19th 1816.

TENNESSEE.

Position, boundaries and extent.—Bounded by the Mississippi W., state of Kentucky N., Virginia N. E., North Carolina E., Georgia S. E., Alabama S., and the state of Mississippi S. W.

	Miles.
Beginning on the Mississippi river at N. lat. 36° 30′, thence due E. to Tennessee river,	64
Down Tennessee river,	12
Thence by a line a little south of E. along Kentucky to the south-west angle of Virginia,	250
Continuing the last line along Virginia to the N. E. angle of Tennessee,	105
Thence S. W. along the north-western boundary of North Carolina to the northern boundary of Georgia,	174
Thence due W. along Georgia and N. lat. 35°, to the N. E. angle of Alabama,	100
Along northern boundary of Alabama to the N. E. angle of the state of Mississippi,	140
Thence along Mississippi to Mississippi river,	116
Up the latter river to the place of outset,	150
Having an entire outline of	1111

Extending from N. lat. 35° to 36° 40′, and in long. from 4° 12′ to 13° 14′ W. The area of Tennessee measured by the rhumbs, is 43,265 square miles. The mean length of Tennessee from E. to W., is about 400 miles, and mean width 108.

Natural Geography.—It has already been remarked under several heads, that the climate of the Atlantic states changed with the meridians, and a similar remark may be repeated in regard to Tennessee. A difference of level amounting to at least

800 feet, must exist between the alluvial banks of the Mississippi and the mountain vallies of the higher branches of Tennessee. The state is therefore an inclined plain, falling from the table land of the Appalachian system by a descent affecting relative temperature to the amount of 2° of Fahrenheit.

From such structure, the extremes of the state admit the profitable culture of cotton and small grain, and its most fertile river vallies, it is supposed by many, are the most favorable to the development of indian corn, of any places found in the United States. Fruits flourish also abundantly, and to the apple and peach the vine might no doubt be added.

Iron and salt are also products of Tennessee, as are gypsum, nitrous earth, beautiful marbles, and some other fossils. The iron and gypsum are the most plentiful and valuable of the mineral bodies in the state.

In its natural state, Tennessee was covered with a most dense and specifically diversified forest, which added to its cultivated vegetables, and metallic and fossil wealth, give great variety and value to the staple commodities, which are again indefinitely augmented by domestic animals. Provisions indeed of all kinds, and horses, cattle and hogs are exported to great amount annually.

The two fine rivers, Cumberland and Tennessee, which traverse this state, give considerable commercial facility; but the lowness of the water in autumn, and the great distance of Eastern Tennessee, from even the Mississippi, superinduce the rearing and transportation of live stock.

Political Geography.—Nashville, the commercial and legal capital of Tennessee, stands on the east bank of Cumberland river, 430 miles N. E. from Natchez, 480 N. N. E. from New Orleans, and by the post road 709 miles N. W. by W. from Washington City, N. lat. 36° 09′, long. 9° 38′ W.

The advance of Nashville has been very rapid of late years; in 1820 the population was estimated at 4000, at present the number amounts to upwards of 6000 and places this city in rank next to Pittsburg.

Knoxville in East Tennessee contains about 3000 inhabitants, and a number of the county seats from 500 to 1500.

Counties.	*Chief Towns.*	*Pop.* 1820.
Anderson, *m. e.*	Clinton	4,668
Bedford, *m. s.*	Shelbyville	16,012
Bledsoe, *m. e.*	Pikeville	4,005
Blount, *e.*	Marysville	11,258
Campbell, *n. e.*	Jacksboro	4,244
Carroll, *w.*	Huntingdon	
Carter, *e. m.*	Elizabethtown	4,835
Claiborne, *n. e.*	Tazewell	5,508
Cocke, *e.*	Newport	4,892
Davidson, *m.*	NASHVILLE	20,154
Dickson, *m.*	Charlotte	5,190
Dyer, *w.*	Dyerburg	
Fayette, *s. w.*	Summerville	
Fentess, *n.*	Jamestown	
Franklin, *s.*	Winchester	16,571
Gibson, *w.*	Trenton	
Giles, *s.*	Pulaski	12,558
Grainger, *m. e.*	Rutledge	7,651
Greene, *e.*	Greenville	11,324
Hardiman, *s. w.*	Bolivar	
Hamilton, *s. e.*	Hamilton	821
Hardin, *s.*	Savannah	1,462
Hawkins, *n. e.*	Rogersville	10,949
Haywood, *w.*	Brownsville	
Henderson, *w.*	Lexington	
Henry, *n. w.*	Paris	
Hickman, *m. s.*	Centreville	6,080
Humphries, *m. w.*	Reynoldsburg	4,067
Jackson, *n.*	Gainsboro	7,593
Jefferson, *e.*	Dandridge	8,953
Knox, *m. e.*	Knoxville	13,034
Lawrence, *s.*	Lawrenceburg	3,271

Counties.	*Chief Towns.*	*Pop.* 1820.
Lincoln, *s.*	Fayetteville	14,761
M'Minn, *s. e.*	Athens	1,623
M'Nairy, *s.*	Purdy	
Madison, *w.*	Jackson	
Marion, *s. e.*	Jasper	3,888
Maury, *m. s.*	Columbia	22,141
Monroe, *s. e.*	Rockville	2,529
Montgomery, *n.*	Clarksville	12,219
Morgan, *n.*	Montgomery	1,676
Overton, *n.*	Monroe	7,128
Obion, *n. w.*	Troy	
Perry, *m. w.*	Shannonsville	2,384
Rhea, *m. e.*	Washington	4,215
Roane, *m. e.*	Kingston	7,895
Robertson, *n.*	Springfield	9,938
Rutherford, *m.*	Murfreesboro	19,552
Sevier, *e.*	Sevierville	4,772
Shelby, *w. s.*	Raleigh	354
Smith, *n.*	Carthage	17,580
Stewart, *n. w.*	Dover	8,397
Sullivan, *n. e.*	Blountsville	7,015
Sumner, *n.*	Gallatin	19,211
Tipton, *w.*	Covington	
Warren, *m.*	M'Minville	10,348
Washington, *e.*	Jonesboro	9,557
Wayne, *s.*	Waynesboro	2,459
Weakley, *n. w.*	Dresden	
White, *m.*	Sparta	8,701
Williamson, *m.*	Franklin	20,640
Wilson, *m. n.*	Lebanon	18,730
Total		422,813

Of the preceding aggregate were whites, 340,919, free coloured persons 2,737, and slaves 79,157.

Engaged in Agriculture,		101,919
Do.	Manufactures,	7,860
Do.	Commerce,	882

Progressive population.

1790	35,691	1810	261,725
1800	105,602	1820	422,613

There is no rational doubt, but that by the census of 1830, the population of Tennessee will considerably exceed 600,000.

History.—Though a few scattering settlements preceded that period, the building of Fort Loudon in East Tennessee 1757, commenced the real colonization of the country, a colonization made in blood. A war with the Cherokees broke out in 1759, and in the ensuing year, Fort Loudon was taken and the garrison and inhabitants massacred. In 1761 Col. Grant forced the Indians to a peace, and settlers gradually entered Upper Tennessee. No real peace could be maintained with the savages, nor were the frontiers of Tennessee really safe until the close of the revolutionary war.

West Tennessee began to be settled about the same period with East Tennessee, and the same causes of suffering and retardation, operated on both settlements. The battle of King's Mountain, Oct. 7th 1780, gained in great part by the hardy riflemen of Tennessee and Kentucky,was a most momentous event in the history of both, and was the expiring struggle of their worst enemies,the British, and gave them security against the savages. Intestine violence however, distracted the country for several years. Between 1784 and 1789, attempts were made to form East Tennessee into a separate state, by the name of Frankland. In 1790 North Carolina ceded the whole of what is now Tennessee to the United States, and the same year in May, it was made the territory south west of the Ohio.

The territorial government continued until June 1795, when the inhabitants of both Tennessees being found to amount to 77,262, a convention was called who met at Knoxville, January 11th 1796, and on February 9th reported a constitution for the new state, which on June 1st of the same year, was formally received into the confederacy as an independent member.

VERMONT.

Position, boundaries and extent.—Bounded by Lower Canada N., Connecticut river or New Hampshire E., Massachusetts S., and New York W.

	Miles.
Having an outline along Connecticut river opposite New Hampshire,	170
Along the northern boundary of Massachusetts,	43
In common with New York from N. W. angle of Massachusetts to N. lat. 45° on Lower Canada,	160
Thence along N. lat. 45° and Lower Canada to the place of outset,	90
Having an entire outline of	463

Extending from 42° 44′ to 45° N. lat. and in long. 3° 38′ to 5° 33′ E. Area 9380 square miles. The length equivalent to the difference of latitude 2° 16′ or 157 statute miles, mean width 59 miles.

Natural Geography.—Vermont is composed of two not very unequally inclined planes, with a chain of comparatively high mountains, extending the whole length of the state, in a direction declining from the meridians N. N. E. and S. S. W. It is remarkable that this main chain of mountains is not the dividing ridge of the rivers. Onion, La Moelle and Missisque rivers, all rise to the east and pierce the Green Mountains in their western course into lake Champlain. Otter river on the contrary, rises west of the main chain, near the S. W. angle of the state, and flows N. N. W. into lake Champlain. The water courses of the eastern slope of Vermont, enter the Connecticut river, and are comparatively humble in length of course.

In the physical part of this view, I have already shewn that lake Champlain was only 90 feet elevated above the Atlantic tides. It is probable that many cultivated parts of Vermont are at least 1000 feet, giving a difference in temperature of between two and three degrees of Fahrenheit, from change

of relative level. The winters are severe even to an extent beyond what could be expected from either latitude or height.

The surface of the state is generally hilly, but not rocky, with a fine productive soil. The natural growth on the mountains, is evergreen, composed of pines, cedars, spruces, hemlock and laurels, from which the name of the state and of the mountains themselves is derived.

The staples are grain, timber, pot and pearl ashes, live stock, and some iron. The commercial facilities of Vermont have been incalculably enlarged and improved by the canal works, formed along Connecticut river, and still more by the Hudson and Champlain canal. If the navigation of the Sorel and St. Francis rivers were made complete, this state would possess an inland navigation in a high degree advantageous; already the surplus products find a ready means of transportation to profitable markets.

Political Geography.—Montpelier, the capital of the state and seat of justice for Washington county, stands in a most picturesque mountain valley on the right bank of Onion river, 167 miles N. N. E. from Albany, 158 N. W. from Boston, and about 120 S. E. from Montreal, N. lat. 44° 16′ and long. 4° 28′ E. Pop. 1820, about 2500.

In all the combined advantages of population, manufactories and seminaries of education, Middlebury, seat of justice for Addison county, is the real capital of Vermont, though in the mere number of inhabitants it is exceeded by Bennington. Middlebury is situated on the right bank of Otter river, about 40 miles S.W. from Montpelier; Bennington on Hoosack river, 38 miles N. E. from Albany. There are several other flourishing villages in Vermont, the principal of which will be found annexed to their respective counties.

Counties.	*Chief Towns.*	*Pop.* 1820.
Addison, *w.*	Middlebury	20,469
Bennington, *s. w.*	Bennington	16,125
Caledonia, *n. e.*	Danville	16,669
Chittenden, *n. w.*	Burlington	16,055
Essex, *n. e.*	Guildhall	3,284
Franklin, *n. w.*	St. Albans	17,102
Grand Isle, *n. w.*	North Hero	3,527
Orange, *e.*	Chelsea	24,681
Orleans, *n.*	Craftsbury	6,976
Rutland, *w.*	Rutland	29,983
Washington, *m.*	MONTPELIER	14,113
Windham, *s. e.*	Fayetteville	28,457
Windsor, *e.*	Woodstock	38,233
Total		235,764

The aggregate population in 1810 was 217,895, the inhabitants therefore had increased upwards of 8 per cent in the intermediate 10 years, and such ratio of increase if maintained, will give to Vermont in 1830 an aggregate population of about 255,000.

By the census of 1820, there were engaged in Agriculture, 50,950; in Manufactures, 8,484; in Commerce, 776.

History.—Vermont, like Delaware, owes its existence as a state to the vague charters and conflicting claims of contiguous colonies. The first actual civilized settlement within its existing limits, was made in 1724, by the building of Fort Durance, on Connecticut river, by the people of Massachusetts. In 1731, Crown Point, on lake Champlain, was founded on the western shore of lake Champlain by the French, and scattering settlements commenced on the opposite bank now in Vermont. The conquest of Canada in 1760, and its ultimate cession to Great Britain in 1763, opened Vermont to emigration. New Hampshire claimed the soil and granted lands to settlers; New York asserted its claim under the Duke of York's patent, and the con-

tested rights being referred for decision to the British crown, New York prevailed, and New Hampshire acquiesced. But the great mass of the actual settlers held under the latter, and the former, by an act of injustice and folly, declared the New Hampshire grants null and void, and of course forced the people to a resistance which justice and despair rendered successful.

Though, however, unconnected with any other colony, and unacknowledged as a separate jurisdiction, the people of Vermont entered warmly into resistance to the arbitrary acts of Great Britain, and throughout the revolutionary war acted a most conspicuous part in the contest.

At the peace of 1783, Vermont was in a peculiar situation; with no connexion with the confederated states, except national sympathy, and their well deserved share of honor gained by the issue of a conflict in which all had partaken the danger, the Vermontese stood opposed to New York, the legislature of which persisted in their claim. That claim was withdrawn in 1789, in consideration of the payment by Vermont of 30,000 dollars. This vexatious controversy terminated, a convention was called to deliberate on the expediency of joining the United States, which was determined in the affirmative. The consent of Congress was obtained, and on March 4th, 1791, Vermont became the fourteenth state of the confederacy.

The existing constitution was formed by convention held at Windsor, July 4th, and adopted July 9th, 1793. Since the latter period, tranquillity and plenty have reigned over Vermont.

VIRGINIA.

Position, Boundaries, and Extent.—Bounded by the Atlantic ocean, S. E.; by North Carolina, S.; Tennessee,

S. W.; Kentucky, W.; Ohio river and state of Ohio, N. W.; Pennsylvania and Maryland N.; and Maryland, N. E.

	Miles.
Having an outline on the Atlantic ocean of	110
In common with Maryland, from the Atlantic ocean to the mouth of Potomac	55
Up Potomac river to its source	200
Thence due N. to the south boundary of Pennsylvania	36
Thence due W. to the S. W. angle of Pennsylvania	53
Thence due N. along the west boundary of Pennsylvania to Ohio river	64
Down Ohio river, following its bends, to the mouth of Big Sandy river	355
From the mouth of Big Sandy river, in common with Kentucky, to the northern boundary of Tennessee, on N. lat. 36° 30′	170
Thence E. along Tennessee and North Carolina to the Atlantic ocean	440
Having an entire outline of	1483

Extending from N. lat. 36° 30′, to 40° 37′, and in long. from 1° 21′ E. to 6° 40′ W.

On the recently published state map of Virginia, the area is given at a fraction above 66,000 square miles. The preceding aggregate is made up from the particular superficies of the counties, but the same map, when the rhumbs are carefully measured, yields a small fraction above 70,000 square miles. At the estimate on the map it is still the most extensive state of the United States. The greatest length is along the southern boundary, 440 miles, and if the area is assumed at 66,000 square miles, the mean width will be 150 miles.

Natural Geography.—Virginia, next to Georgia and Illinois, has the greatest range of latitude, of any state of the United States, and if we duly regard the high vallies of the Appalachian system, it may be doubted whether Virginia does not exceed even Georgia in extremes of temperature. The extremes

of latitude between the northern limit of North Carolina, and the northwest angle on Ohio, are 4° 07′, and the difference arising from relative level cannot fall short of 3 degrees of Fahrenheit, consequently the difference of seasons about equal to 7 degrees of latitude on the Atlantic coast. The whole surface of the state is composed of two unequally inclined planes; the larger declining towards the Atlantic ocean, and the lesser towards Ohio river. The line of separation or apex of these planes traverses the Appalachian system obliquely.

In point of soil Virginia is divisible into three zones; the eastern part sea-sand alluvial; the middle or hilly, and the western or mountainous. The subjoined table expresses the respective area and the population according to the census of 1820.

Summary.	*Sq. Miles.*	*Pop.* 1820.	*Pop. to sq. m.*
East Virginia	8,875	262,524	30
Middle Virginia	24,300	655,266	26
West Virginia	32,825	147,514	4½

Though the habitable zones of Virginia are not so very distinctly marked as in the Carolinas and Georgia, yet in the former as in the latter cases, each part has its appropriate character. The oceanic section of Virginia is its tropical climate. Latitude, exposure, and depressed level, all combine to give the Chesapeake counties a much more elevated temperature than is found in the interior. This difference is seen on vegetation. In the lower counties, cotton may be cultivated successfully, whilst the uncertainty of grain and meadow grasses, evinces a southern summer.

The middle, as in fact in all the Atlantic states south from Pennsylvania, we find the Arcadia of the state. The Middle Virginia is, however, blended with the mountainous, the former containing the whole or great part of the valley counties, Berkley, Jefferson, Frederick, Shenandoah, Rocking-

ham, Augusta, Rockbridge, Botetourt, Montgomery, Wythe, and Washington.

The real Mountain section lies northwest from the Middle, and extends to the Ohio. The extreme western part is indeed composed of a congeries of hills, with alluvial bottoms, but the actual mountain ridges encroach so near Ohio river, and the hills are in themselves so generally abrupt and lofty, as to give an alpine appearance to the country.

Taken as a whole, Central Virginia is the best in respect to soil, though in the mountainous part there is much that is excellent. Density of population has in this state been less influenced by fertility of soil than on any other section of the United States.

With the exception of the south-eastern counties, grain and orchard fruits are highly congenial to Virginia, and the various products of the latter are the natural, actual, and we may safely say, the permanent staples of the state. Of metals, iron ore is abundant in the central and western sections. Salt water has been procured on the Great Kenhawa, and that indispensable article extensively manufactured.

The natural navigable facilities, and the evident meliorations they admit, call loudly on Virginia to rival, in canal and road improvements, the most active and powerful of her sister states.

Political Geography.—Richmond, the capital of Virginia, is situated on an elegant acclivity, rising from the left bank of James river, directly at its lower falls and head of tide, 126 miles S. 17° W. from Washington city; lat. 37° 27′ N., and long. 0° 33′ W. Population in 1810, 9735; in 1820, it had risen to 12,067. The site and appearance of Richmond are highly pleasing. No city of the United States of equal population has a more imposing aspect when viewed from a good position. It is also a commercial depot of far more consequence than might be supposed from comparative population.

Norfolk is the commercial capital of the state, situated on Elizabeth river immediately below the junction of its two main branches, and 8 miles above Hampton-roads, N. lat. 36° 50′, and long. 49′ E. Population in 1820, 8,478.

Petersburg, on the right bank of Appomatox, at the head of the tides, 25 miles south from Richmond, is a place of great trade in grain, flour, cotton, and tobacco; population, about 6000. This city stands in three counties, Chesterfield, Dinwiddie, and Prince George.

Lynchburg, capital of Campbell co., stands on the right bank of James river, 118 miles W. from Richmond, lat. 37° 18′ N., long. 2° 16′ W. Though not so marked on our maps, this city occupies a mountain gap, where James river passes the south-east mountain. Few of the interior towns of the United States exceed Lynchburg in commerce, or what may appear more remarkable, in manufactures. It is the emporium of an extensive, fertile, and well cultivated country. The river is navigable from here to Richmond, and immense quantities of flour, tobacco, wheat, hemp, and other products are sent down. Population about 6000.

Charlotteville, seat of justice of Albemarle county, Virginia, seated on the Rivanna river 86 miles north-west from Richmond, at N. lat. 38° 03′ and 1° 28′ W., has become a place of great interest from the location there, in 1825, of the University of Virginia. It is also a place of considerable commercial importance.

Fredericksburg on the Rappahannoc, Leesburg, Winchester, Harper's Ferry, Fincastle, Christiansburg, Evansham, Abingdon, Staunton, Wheeling on the Ohio, and some others are flourishing towns. The latter is a very prosperous depot, and for more than half the year at the head of steam boat navigation.

The subjoined lists of counties are formed from

the natural sections, and serve to exhibit the distributive population.

Eastern or Alluvial Section of Virginia.

Counties.	*Chief towns.*	*Pop.* 1820.
Accomac, *e.*	Drummondstown	15969
Caroline, *e.*	Bowling Green	18008
Charles City, *s. e.*	Charles City	5255
Elizabeth City, *s. e.*	Hampton	3789
Essex, *e.*	Tappahannock	9909
Gloucester, *e.*	Gloucester C. H.	9678
Greensville, *s.*	Hicksford	6858
Isle of Wight, *s. e.*	Isle of Wight C. H.	10139
James City, *e.*	Williamsburg	4563
King and Queen, *e.*	King and Queen C. H.	11798
King George, *e.*	King George C. H.	6116
King William, *e.*	King William C. H.	9697
Lancaster, *e.*	Lancaster C. H.	5517
Mathews, *e.*	Mathews C. H.	6920
Middlesex, *e.*	Urbana	4057
Nansemond, *s. e.*	Suffolk	10494
New Kent, *e.*	New Kent C. H.	6630
Norfolk, *s. e.*	Norfolk	23943
Northampton, *e.*	Eastville	7705
Northumberland, *e.*	Northumberland C. H.	8016
Princess Anne, *s. e.*	Kempsville	8767
Prince George's, *m. s.*	City Point	8030
Prince William, *e. n.*	Brentsville	9419
Richmond, *e.*	Richmond	5706
Southampton, *s. e.*	Jerusalem	14170
Surry, *s. e.*	Surry C. H.	6594
Sussex, *s. e.*	Sussex C. H.	11884
Warwick, *e.*	Warwick	1608
Westmoreland, *e.*	Westmoreland C. H.	6901
York, *e.*	Yorktown	4384
Total		262,524

Middle Virginia.

Albemarle, *m.*	Charlottesville	19750
Amelia, *m. s.*	Amelia C. H.	11106

Counties.	*Chief towns.*	*Pop.* 1820.
Amherst, *m.*	Amherst C. H.	10426
Augusta, *m.*	Staunton	16724
Bath	Bath C. H.	5237
Bedford, *m. s.*	Liberty	19305
Berkeley, *n.*	Martinsburg	11211
Botetourt, *m. w.*	Fincastle	13589
Brunswick, *s.*	Gholsonville	16687
Buckingham, *m.*	Buckingham C. H.	17570
Campbell, *m. s.*	Lynchburg	16569
Charlotte, *s.*	Charlotte C. H.	13290
Chesterfield, *m. e.*	Chesterfield C. H.	18003
Culpepper, *m. n.*	Culpepper C. H.	20942
Cumberland, *m.*	Cumberland C. H.	11023
Dinwiddie, *m. s.*	Dinwiddie C. H.	20482
Fairfax, *n. e.*	Fairfax C. H.	11404
Fauquier, *n. e.*	Warrenton	23103
Fluvanna, *m.*	Columbia	6704
Franklin, *s.*	Rocky Mount	12017
Frederick, *n.*	Winchester	24706
Goochland, *m.*	Goochland C. H.	10007
Halifax, *s.*	Bannister	19060
Hampshire, *n.*	Romney	10889
Hanover, *m. e.*	Hanover C. H.	15267
Hardy, *n.*	Moorefields	5730
Henrico, *m. e.*	RICHMOND	23657
Henry, *s.*	Martinsville	5624
Jefferson, *n.*	Charleston	13087
Loudoun, *n. e.*	Leesburg	22702
Louisa, *m.*	Louisa C. H.	13746
Lunenburg, *s.*	Lewistown	10662
Madison, *m.*	Madison	8490
Mecklenburg, *s.*	Boydton	19786
Morgan, *n.*	Bath	2500
Nelson, *m.*	Lovingston	10137
Nottaway, *m. s.*	Nottaway C. H.	9658
Orange, *m.*	Orange C. H.	12913
Patrick, *s.*	Taylorsville	5089
Pendleton, *m.*	Franklin	4836
Pittsylvania, *s.*	Competition	21313
Prince Edward, *m. s.*	Prince Edward C. H.	12577

Counties.	*Chief Towns.*	*Pop.* 1820.
Pocahontas, *m. w.*	Huntersville	
Powhatan, *m.*	Scottsville	8292
Rockbridge, *m.*	Lexington	11945
Rockingham, *m.*	Harrisonburg	14784
Shenandoah, *m. n.*	Woodstock	18926
Spottsylvania, *m. e.*	Fredericksburg	14254
Stafford, *n. e.*	Stafford C. H.	9517
Total		655,265

Western or Mountainous Virginia.

Brooke, *n. w.*	Wellsburg	6611
Cabell, *w.*	Cabell C. H.	4789
Giles, *w.*	Parisburg	4521
Grayson, *s. w.*	Grayson C. H.	5598
Greenbrier, *m. w.*	Greenbrier C. H.	7041
Harrison, *n. w.*	Clarksburg	10932
Kenawha, *w.*	Charleston	6400
Lee, *s. w.*	Lee C. H.	4256
Lewis, *n. w.*	Weston	4247
Mason, *w.*	Point Pleasant	4868
Monongalia, *n. w.*	Morgantown	11060
Monroe, *m. w.*	Union	6620
Montgomery, *s. w.*	Christiansburg	8733
Nicholas, *w.*	Nicholas C. H.	2853
Ohio, *n. w.*	Wheeling	9182
Preston, *n. w.*	Kingwood	3422
Randolph, *n. w.*	Beverly	3357
Russel, *s. w.*	Lebanon	5536
Scott, *s. w.*	Estillville	4263
Tazewell, *s. w.*	Jeffersonville	3916
Tyler, *n. w.*	Middlebourne	2314
Washington, *s. w.*	Abingdon	12444
Wood, *n. w.*	Parkersburg	5860
Wythe, *s. w.*	Evansham	9692
Total,		147,514

From the foregoing analysis we discover the very great inequality of distributive population in Virgi-

nia; on the Eastern section 30 to the square mile; on the Middle region 26; and on the Western only 4½. The distribution of the castes is not less remarkable:

In 1820, there were in the east and centre, whites 452,930, of the coloured caste 424,370; whilst in the western there were, whites 132,790, and of the coloured caste only 13,296; eastern and middle, the proportions of the castes very nearly 45 white to 42 coloured; in the west, the whites were as 132 to 13 to the coloured race.

Of the whole aggregate population of Virginia, by the census of 1820, there were,

Engaged in	Agriculture	276,422
Do	Manufactures	32,336
Do	Commerce	4,509

Progressive Population.

1790	747,601	1810	974,622
1800	886,149	1820	1,065,366

The advance of population in Virginia it appears has been nearly steady, at about from 10 to 12 per cent. in 10 years. The increments in the first two periods demand a little higher ratio, but 11 per cent in the three periods come very near the result by the census. If the rate of increase is not accelerated it will demand nearly a century to double. The general existing population must be about 18 to the square mile.

History.—Virginia was the first Anglo-American colony, and "the first germ of a mighty nation." The name of Virginia was derived from Raleigh's patent, and was, at the period of colonization, the common English name for the eastern coast of North America. James I., by letters patent, April 10th, 1606, granted to two companies, the London Company and the Plymouth Company, all that part of the American coast from N. lat. 34° to 45°, un-

der the names of North Virginia and South Virginia. The latter effected an actual settlement on Powhatan, now James river, May 15, 1607, and thus commenced the UNITED STATES. The early advance was very slow; the colony was regarded with general indifference in England. In 1619 the first legislature was convened, an advantage more than counterbalanced, the ensuing year, by the introduction of the first African slaves.

During the revolution in England, from 1642 to 1660, Virginia espoused the royal cause, and was the first place where Charles II. was proclaimed on his restoration, and in 1661 the Episcopal church was established by act of Assembly. This and other acts equally injudicious produced a rebellion in the colony, in which the capital, Jamestown, was burned. The instigator of the insurrection, Bacon, died suddenly, but Virginia was rewarded for its devotion to the Stewarts, by oppression which terminated only by the ruin of that misguided house. The revolution in 1688, extended its salutary effects into every section of English domination, and Virginia shared the benefits. Nearly 80 years of peace and prosperity was followed by the revolutionary struggle, in which Virginia gave to the sister colonies the whole of her energies, and, what was perhaps more, she gave them a leader whose name adorns history, and whose character proves to what exalted elevation human virtue may be raised.

The constitution of Virginia was adopted July 5th, 1776, and, except the illustrious acts of her sons in the two wars with Great Britain, the state has since the latter period afforded few events for history. The establishment of the University of Virginia at Charlottesville, March 1825, and recent attempts at an amendment of her constitution, are the only recent public acts particular to this state.

THE END.

INDEX.

[*** The reader will notice, that the individual counties are not included in this index, as they are already alphabetically arranged in Chapter XII. under the heads of the respective states: therefore, to find any required county, turn to the state to which it belongs, and it will be found in its place.]

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☞ The Map of the United States is nearly completed, and will be published early in the spring of 1829.